

Pullman Industrial Complex
Vic. of 111th St. and Cottage Grove Ave.
Chicago, Illinois
Cook County

HAER No, IL-5

HAER
ILL,
16-CHIG,
102-

REDUCED COPIES OF MEASURED DRAWINGS
PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20240

HAER
ILL,
16-CHIC,
102-

HAER No. IL-5

HISTORIC AMERICAN ENGINEERING RECORD
PULLMAN INDUSTRIAL COMPLEX

Date: 1880-1883

Location: Vicinity of 111th St. and Cottage Grove Ave.,
Chicago, Illinois

Designed By: S.S. Beman and Nathan F. Barrett

Present Owner: multiple private owners

Significance: Between 1880 and 1883 the Pullman Palace Car Company built a complete factory and town on the shore of Lake Calumet for the purpose of building railroad rolling stock. It was among America's first planned industrial communities.

Historians: Donald C. Jackson and Carol Poh Miller, Project Supervisor

INTRODUCTION

Between 1880 and 1883, the Pullman Palace Car Company, under the direction of its founder, George M. Pullman, constructed a complete town and shop complex designed to meet the increasing demands of the railroad age for rolling stock of all kinds. The result was Pullman, Illinois, a planned industrial community located 14 miles south of Chicago. Architect S. S. Beman and landscape architect Nathan F. Barrett together designed the "model" town, which represented a dramatic departure from the unhealthy and crowded conditions that characterized working class life in cities. Sanitary and attractive dwellings, a church, schools, library, theater, stores and recreation facilities were designed in proximity to an extensive industrial complex which, by 1893, employed over 5,000 persons.

Pullman represented one businessman's attempt to resolve the increasingly violent conflict between capital and labor. The town would exclude (in George Pullman's words) all "baneful elements," and so attract and keep the best class of mechanics. In return, the company would enjoy more and better work and a six per cent return on its investment, since all community facilities and houses were to be rented at a profit.

Much attention has been focused on the Pullman strike of 1894 and the resounding failure of the labor experiment at Pullman. This unfortunately has been at the expense of the recognition Pullman deserves for its place in American industrial and technological history. The town/shop complex at Pullman was remarkable both for its size and completeness; Pullman represented an assemblage of individual factories which, from raw materials, manufactured

virtually every item required for the construction of passenger and freight cars. Few, if any, industries in that period employed so large and so diverse a work force; the several thousand employees included foundrymen, skilled carpenters, marble workers, seamstresses and steamfitters among others. Pullman was one of the earliest (and certainly the grandest of all) attempts to secure more productive work from contented workers, providing recreation and housing far in advance of the time. Finally, few businessmen sought, as George Pullman did, to establish an attractive corporate image through careful attention to the design and appearance of the physical plant. Historian Sigfried Giedion has said that Pullman was "one of the first entrepreneurs to master the effective use of publicity."¹

By the late 1870s, George Pullman had already captured the imagination of the American public with his luxurious sleeping and dining cars. The new town etched the name "Pullman" even more deeply into the American consciousness, for the ambitious experiment drew the attention of newspapers and magazines across the country. The image was one of order, efficiency and economy, those same virtues that already characterized the Pullman car and the Pullman Company which operated the cars over a substantial portion of America's railroads. With the absorption of the Wagner Company -- its chief competitor -- in 1899, Pullman's monopoly of first class service was complete. In terms of industrial innovation, the Pullman Car Works, America's largest single producer of railway rolling stock, utilized a prototype system of mass production. Freight car production in particular was characterized by standardized, prefabricated parts assembled by teams of workers each performing a highly specialized function. In 1885, the Pullman Freight Car

Shops constructed 100 flat cars in a single day. The efficiency of the Pullman plant -- such things as plant layout, the recycling of wood scraps as fuel for the Corliss engine, the division of labor -- earned praise from its inception.

Because the industrial and technological aspects of Pullman have never received the in-depth examination they so richly deserve, the Historic American Engineering Record and the Historic Pullman Foundation, a local organization seeking to preserve its historic neighborhood, together sponsored a survey team to take a closer look. The team, composed of two historians and one architect, spent two months at Pullman during the summer of 1976, examining the physical and literary remnants of what proved to be a site of unusual interest. The result is the present history of Pullman with its special focus on Pullman as an industrial complex. In addition, a series of seven maps was made to trace the development of the complex and help document the revolution that took place at Pullman when the change was made from wood to steel car construction. The changeover prompted the redesign of the original Pullman Car works and wrought dramatic changes in both the industry and its workers.

Pullman, which has been a part of Chicago since its annexation in 1889, today appears as a kind of oasis in the industrial sea that is the city's south side. Its substantial brick construction reminds one of America's eastern cities and lends a distinctive character to the neighborhood. The majority of Pullman's residential buildings are still intact: boarding houses, the large houses once occupied by Pullman's executive class, and the more modest rowhouses of artisans all exist as evidence of how Pullman's workers lived.

Several of the original community buildings, including the Hotel Florence and the Greenstone Church, still exist, although the Arcade, Casino, schoolhouse and both railroad stations have been demolished.

Within the original industrial complex, the Administration Building and several of the Erecting Shops can still be seen, as can the Union Foundry, which manufactured the iron structural work and all of the wheels for Pullman freight cars. Time has been less kind to the rest of the Pullman plant, however, for all of the remaining original buildings of "the most interesting industrial establishment on the continent" have become victims of obsolescence and the industry's continual attempts to modernize. Only such later structures as the second Iron Machine Shop (c. 1890), the Fire Station (1894) and the Steel Freight Car Shops and Power House (1910) remain to suggest the magnitude of the Pullman Complex. Weedy growth today covers much of the site, although many of the original foundations can still be seen and the recent retrieval of a brick chard bearing the imprint "PULLM-" suggests the presence of other such artifacts. It is not known whether the underground shafting of the Centennial Corliss Engine that powered the Pullman complex until 1910 still exists, but such a possibility presents an interesting opportunity to future students of industrial archeology.

A scarcity of original written records compounded the problems of researchers paying particular attention to an industrial complex largely destroyed. Early Pullman Company records were discarded prior to demolition of the Water Tower in 1957, where they were stored. The sources that proved most valuable were the Pullman Company Scrapbooks, containing newspaper and magazine clippings about the company for the years 1864-1924, on which the present narrative

largely relies²; a handwritten notebook kept by Pullman's "resident statistician and engineer," Duane Doty, during 1882; and an insurance map for 1886, without which a complete picture of the Pullman industrial complex would have been impossible. The first and last of these sources are located in the Pullman Collection at Chicago's Newberry Library. Duane Doty's notebook forms a part of the archives maintained by the Historic Pullman Foundation at its headquarters in the Hotel Florence. Finally, The Town of Pullman by Mrs. Duane Doty (the book actually was compiled by Mrs. Doty from "a hundred special papers" authored by her husband), is a valuable, though not always reliable, source that provides an overview of the town and shops in 1893.

With so many limitations, it has been difficult to pierce the anonymity that surrounds a work force of over 5,000 men, women, and children. Indeed, in 1914, after its change to steel car production, the Pullman Car Works employed a work force exceeding 14,000. It is hoped that, with the dissemination of this present report, other sources will come to light to provide fresh documentation for one of the nineteenth century's largest industrial complexes.

Acknowledgements

Special thanks are due to John Aubrey and his staff in the Rare Book Room of the Newberry Library, all of whom helped to make the Pullman Collection so accessible to the researchers. Numerous present and past employees of Pullman-Standard -- especially Robert E. Johnson, Mark Murray, William J. Walker and

Woodrow Eisenhart -- gave generously of their time to talk about the "old days" at Pullman and the car-building industry of today. Charles E. Gregersen, a diligent student of S. S. Beman, shared his knowledge of the architect's work at Pullman. The librarians at the Chicago Historical Society were both courteous and helpful, as was Annette Fern at the Chicago Art Institute. Frank H. Beberdick, an engineer and resident of Pullman with a special interest in the power systems used at Pullman, assisted with that aspect of the report. Final thanks go to the Historic Pullman Foundation, especially Pat and Mike Shymanski, for their generous support.

Introduction

¹Sigfried Giedion, Mechanization Takes Command: A Contribution to Anonymous History (New York: Oxford University Press, Inc., 1948; reprint ed., New York. W. W. Norton & Co., Inc., the Norton Library, 1969), p. 453.

²Pullman Company, "Scrapbooks, Miscellaneous," Series A, Volume 2, unpagged, Pullman Collection, Newberry Library, Chicago, Illinois. Pullman Incorporated has given the Newberry Library the following scrapbooks, consisting of newspaper and periodical clippings, compiled, presumably, in the Pullman Company Offices:

- I. Scrapbooks, Miscellaneous
 - Series A, Vols. 1-34 (1865-1925)
 - Series B, Vols. 1-9 (1883-1924)
 - Series C, Vols. 1-2 (1897-1908)

- II. Scrapbooks, Town of Pullman, 1883-1920

- III. Scrapbooks, Strike, Vols. 1-11
(January 1894-August 1897)

- IV. Scrapbooks, General Superintendent's Office,
Vols. 1-12 (1882-1908)

- V. Scrapbooks, Company in Europe, 1873-1878

Subsequent references to this material will include the source of the

original reference, followed by their location in the Scrapbooks.

Sample subsequent references follow:

¹¹Elmira (New York) Daily Gazette, 10 May 1873, from
"Scrapbooks, Misc.," ser. A, Vol. 3, unpagued.

¹³Detroit Tribune, 22 October 1875, from "Scrapbooks, Misc.," ser A.,
Vol. 4, 10.

If nothing else, it is hoped that this report will assist future historians in making use of the scrapbooks at the Newberry Library. Though Stanley Buder stated in his book, Pullman, An Experiment in Industrial Order and Community Planning, that he had catalogued the material related to Pullman at the Newberry Library (p. 233) the authors could find no evidence of such a catalogue. By including specific references to the scrapbooks for all notes taken from this source the authors believe this report will be of considerable value to those who wish to probe more deeply into the history of the Pullman Community.

Chapter I

George M. Pullman and the Origins of the Pullman Palace Car Company

In evaluating the industrial community of Pullman, Illinois, it is important to relate the complex to the life of George M. Pullman and his company, the Pullman Palace Car Company (P.P.C.C.). Given that the purpose of the Pullman factory was primarily to construct the "Pullman Cars" used by the P.P.C.C., a description of George Pullman's career and his place in the development of the "sleeping car" provides an essential background to the history of the Pullman community.

Born in Brockton, Chautauqua County, New York in 1831, Pullman's formal education was limited to that obtained in a country schoolhouse.¹ At age 14 he secured employment as a storekeeper in Westfield, New York and three years later he moved to Albion, New York where an older brother owned a cabinet making business. Here he was introduced to the art of woodworking, a craft which would later figure prominently in his own company.

While at Albion, Pullman became involved in moving buildings out of the path of the expanding Erie Canal. It was in this capacity as housemover and contractor that he first ventured to Chicago in 1855. At this time, Chicago suffered from inadequate drainage and a major civic effort was underway to raise the elevation of the entire city. Pullman received contracts to elevate many of the city's buildings, including the famous Tremont Hotel. In raising the hotel, Pullman utilized 4000 jack screws and 1000 men, all under his command. There were only a finite number of buildings to be raised in Chicago

and Pullman's interest soon shifted to what was to become his life's work -- the development and deployment of the "Pullman" sleeping car.

Legend has it that a tumultuous nocturnal railroad journey fired Pullman's imagination and provided the impetus to develop a means of rail travel allowing passengers to ride, day and night, in a clean and comfortable environment. In 1858, with the assistance of Leonard Seibert, a mechanic for the Chicago and Alton Railroad, he remodeled a small number of ordinary coach cars into the first prototypes of the Pullman Car. These went into limited service on the Chicago and Alton line but the coming of the Civil War disrupted this experimentation.

During the war Pullman moved his base of operation to Colorado and established a trading enterprise catering to mining camps in the territory. Documentation is sketchy, but it appears Pullman accumulated enough capital to enable him to finance the first "real" Pullman cars. Upon returning to Chicago in 1864, he poured \$18,000 into the construction of "The Pioneer", a carriage of unprecedented size and luxury. The Pullman company often proclaimed that \$5,000 was the most money ever spent constructing any railroad car prior to "The Pioneer."

Due to the size of the car, one foot wider and two and a half feet higher than usual, it could not be accommodated by standard bridges and depot facilities and Pullman was initially unsuccessful in convincing any railroads to place it in service. In April 1865, he achieved a major public relations coup in offering "The Pioneer" to Mrs. Abraham Lincoln as she accompanied the President's body on the ride from Chicago to Springfield. She accepted and

immediately all bridges and depots were altered along the route to allow passage of the car. Soon afterwards the Chicago and Alton Railroad put the car into permanent service.

When passengers rode on a train which included Pullman Cars, they paid a standard fare to the railroad line and then, if they desired, paid an additional fee directly to the Pullman Company for the privilege of riding in one of their cars. During the boom following the end of the Civil War, Pullman was so successful that, by 1855, a total of 43 sleeping cars were operating on the Chicago and Alton, Michigan Central, and the Great Western (Canadian) railroads.

Although the word "Pullman" became almost synonymous with "sleeping car" during the 20th century, it is important to note that George Pullman was not the "inventor" of the sleeping car. Prior to his experiments on the Chicago and Alton Railroad, sleeping cars had been in service on American railroads for many years. As early as 1835, day coaches had been remodelled to provide sleeping facilities during overnight journeys.² These coaches were divided into a series of compartments along one side of the car, and each compartment consisted of a tier of three bunks. Washing facilities were located at the ends of the car. Because the bunks were permanent fixtures, these sleeping cars were only used at night and passengers adjourned to regular coaches during the day.

In 1838, the Havre de Grace Railroad introduced a car in which the bottoms of the upper tier of berths folded down to form the backs of the lower seats during the day, while at night the backs were drawn to a horizontal position

and held in place by iron clasps at each end. During the next 20 years there are records of numerous patents relating to sleeping car improvements, although there is no record of any patents taken out by George Pullman prior to the Civil War.³ One of Pullman's most important sleeping car patent was his second, which is dated September 19, 1865 and incorporates features which Pullman purchased from other patentees. This patent included an immovable seat back along with back and seat cushions which were hinged together and moved as a unit to form the lower sleeping berth. The berth was hinged to the side of the car.⁴

Following the initial acceptance of Pullman cars upon midwestern railroads, George Pullman became actively engaged in getting his system adopted by as many railroads as possible. In February 1867, the Pullman Palace Car Company was incorporated in the State of Illinois for the purpose of purchasing, manufacturing, operating, and leasing railway cars.⁵ For the next three years construction of Pullman cars was done by various firms throughout the midwest, including the Detroit Car and Manufacturing Company and Barney and Smith's Manufacturing Co. of Dayton, Ohio.⁶ Although the company would always depend on a number of facilities to build and repair its cars, it decided to establish a major carworks under its direct control.

In 1870, the company purchased its first shops, located on Croghan Street in Detroit. Buildings were reportedly on the site since 1355, and it is uncertain to what extent the P.P.C.C. altered the existing physical plant.⁷ With the linking of the transcontinental railroad in 1869, long distance travel by railroad boomed and the demand for Pullman cars kept pace.⁸ The

new production facility in Detroit helped the company continue expansion. By 1875 the P.P.C.C. was running approximately 800 cars over 35,000 miles of railroad line.⁹

The first indication of the P.P.C.C.'s interest in the relationship between workers' productivity and their physical surroundings came in 1873, when the company acquired new headquarters on the corner of Michigan and Adams Streets in Chicago. The National Car-Builder reported that the building was to contain a restaurant, "family room," and ". . . a library and sitting rooms designed to be used by conductors and others, the managers believing that whatever tends to make the headquarters of the company attractive to the employees has the effect to make them more useful. . ."¹⁰ This conceptual linking of attractive physical surroundings to worker productivity would resurface, in a much grander form, with the construction of the town of Pullman seven years later.

By 1879, the growth of railroads and the operations of the P.P.C.C., had been of such magnitude that the company began planning the construction of a new carworks. The demand for more Pullman cars was an important consideration in the company's decision to build new rolling stock facilities. George Pullman, however, also had a dream of constructing a "model town" to accompany the plant, and this distinguished the project from hundreds of other expansions being undertaken by American industries at the time.

It appears that a number of factors came into play in the decision to build Pullman. On the simplest level, the P.P.C.C. was involved in constructing a quality product, for which the public was willing to pay extra to use.

A manufacturing enterprise interested in developing such a market would view interruptions or compromises in quality due to strikes, social unrest, disease or alcohol as undesirable from a business point of view. In a letter read to company stockholders in early 1832, George Pullman wrote:

The sanitary, social, religious and educational conditions [at Pullman] will be such as to render the place unusually attractive and desirable for the better class of mechanics, and the manufacturing interests of the company cannot fail to be largely benefitted by the contented and skilled labor which will be secured on account of the policy which has been inaugurated of intelligent and careful attention to the welfare and comfort of employees.¹¹

Pullman later testified before the U.S. Strike Commission:

The object in building Pullman was the establishment of a manufacturing business of the most substantial basis possible, recognizing as we did, and do now, that the working people are the most important element which enters into the successful operation of any manufacturing enterprise.

We decided to build, in close proximity to the shops, homes for workmen, of such character and surroundings as would prove so attractive as to cause the best class of mechanics to seek that place for employment in preference to others. We also desired to establish the place on such a basis as would exclude all baneful influences, believing that such a policy would result in the greatest measure of success, both from a commercial point of view, and also, what was equally important, or perhaps of greater importance, in a tendency toward continued elevation and improvement of the condition not only of the working people themselves but of their children growing up about them.¹²

The source of Pullman's inspiration for the experiment is not known. Curiously, Pullman makes no mention of the model town in any of his letters (save one to his wife that carries a brief comment on the construction progress at the site), nor did Pullman keep a diary.¹³ It has been asserted that while on board a ship for Europe in 1872, George Pullman twice read Charles Reade's popular novel Put Yourself in His Place.¹⁴ That book published in 1870, found more favor with capital than labor, since the story tended to incite a feeling of hatred for labor unions.¹⁵ It opens with a description of the English industrial city of Hillsborough, and draws a vivid picture of those evils George Pullman avowedly sought to avoid:

Hillsborough and its outlying suburbs make bricks by the million, spin and weave both wool and cotton, forge in steel, form the finest needle up to a ship's armor and so add considerably to the kingdom's wealth. But industry so vast, working by steam on a limited space, has been fatal to beauty: Hillsborough, though built on one of the loveliest sites in England, is perhaps the most hideous town in creation. All ups and downs and back slums. Not one of its wriggling, broken-backed streets has handsome shops in an unbroken row. Houses seem to have battled in the air, and stuck wherever they tumbled down dead out of the melee. But worst of all, the city is pock-marked with public houses, and bristles with high round chimneys. These are not confined to a locality, but stuck all over the place like cloves in an orange. They defy the law, and belch forth massy volumes of black smoke, that hang like acres of crape over the place, and veil the sun and the blue sky even in the brightest day.¹⁵

A reporter for the Boston Herald in 1882 related a story told by him him by an unnamed "intimate friend" of Mr. Pullman:

Returning home [from Europe], . . . [Pullman] declared he had gained from the book conclusions and ideas that to him were of great value. "Indeed," continued the friend, "I know that Mr. Pullman has made almost daily use of the impressions taken from the book, and I know still further that he has few transactions in life . . . that his remembrances of the story do not in some degree influence. . ."17

It is known that George Pullman journeyed to Europe on several occasions.¹⁸ On one of these trips he may have had an opportunity to visit the manufacturing village of Saltaire, located in the north of England. There Sir Titus Salt, the great wool manufacturer, built factories accompanied by homes, churches, schools and reading rooms for his 4,000 artisans. It was "a little commonwealth of operatives in which every comfort necessary to domestic happiness and every privilege of religion and mental culture. . . might be equally accessible to each and every member of it", Harper's Magazine reported in 1872.¹⁹ Even barring firsthand inspection, there is a good chance George Pullman could have seen this magazine's account with its lavish illustrations. It is possible, too, that Pullman, known to have had business dealings with the

Krupp Iron Works during the 1870s, also knew of the dwellings, schools, churches, and hospitals constructed for Krupp's workers in Essen, Germany.²⁰

Without doubt, an important consideration in Pullman's decision to build a "model town" relates to his keen sense of public image. In a few short years Pullman had captured the imagination of the American public with the Pullman car. The town of Pullman would further enhance his company's reputation for order, beauty and efficiency. The town would be a logical extension of the Pullman "system". "The story of Pullman naturally divides itself into three parts," stated a Pullman public relations pamphlet of 1893, "the building of the car, the building of the operating system, and the building of the town. Each of these stages is the natural logical sequence of the other. Through them all runs the same underlying thought, the same thread of idea."²¹

In assessing George Pullman's decision to build his model community, it is important to note that Pullman himself discounted any motives of philanthropy or benevolence. The town of Pullman was a business proposition, an investment expected to return 6% annually. Pullman himself insisted, "A man who can bring his mind down to understand the simplest business proposition can fathom the Pullman scheme very easily. It is simplicity itself. We are landlords and employers. That is all there is of it."²² An article in the Pullman Journal recounting Pullman's life work proclaimed:

Given a great factory in a town in which all the workmen had neat and tasteful homes, and in which there was no filth and squalor, where at every turn they were confronted with object lessons as to the advantage of cleanliness and order--given a factory under such surroundings and it was Mr. Pullman's idea that it would turn profitable than one where the opposite conditions existed.

The author concluded that "[Pullman] stands for an extraordinarily sagacious investment, from a business standpoint."²³

Following George Pullman's decision to build his own town it was necessary to choose an architect, or architects, to provide a physical form that would translate his visions into reality. Although Pullman exerted a strong and dominating influence on the character and style of the community throughout his life, he depended upon Solon Spencer Beman as architect and Nathan F. Barrett as landscape architect for the major portion of the design work.

Barrett (1845-1919) began his career in landscape architecture in 1866 and some of his earliest work involved laying out station grounds for the Central Railroad of New Jersey.²⁴ At the time of his introduction to George Pullman in early 1879, he was landscaping estates on Staten Island and in Tuxedo Park, N.Y. Upon the recommendation of a neighbor, Pullman hired Barrett to improve his estate in Long Branch, N.J. Barrett introduced Pullman to a professional associate, S. S. Beman, whom Pullman invited to come to Chicago to take charge of alterations then underway on his Prairie Avenue mansion. In December 1879 both designers were invited to prepare plans for the new town of Pullman, a project the Boston Herald later described as a "professional dream come true."²⁵

S. S. Beman (1853-1914) had entered the office of Richard Upjohn at the age of 17 and remained there, "a close and earnest student," for several years, during which time he worked on projects such as the Connecticut State Capitol.²⁶

"Mr. Beman had never made a plan of a factory or shop," prior to designing Pullman but he visited the Pullman shops in Detroit, the Pennsylvania shops in Altoona and the Barney and Smith shops in Dayton, Ohio as a means of preparation.²⁷ Barrett laid out the town, grouped the buildings, and designed the streets, drives, and parks. There were no town planners at that time, and according to one source, George Pullman hired Barrett because "in laying out various estates Barrett had located in correct and economic relationship, the sites for the offices, the news and maintenance and store houses."²⁸

The town of Pullman was intended to be both functional and aesthetically pleasing. The Pullman "system", which had succeeded in the realm of railroad travel, was now to be applied to the problems of production and labor. The community was to include factories, housing, schools, a church, a hotel, a market hall, stables, railroad facilities, an arcade containing stores, a library, a bank and a theater. Once Beman and Barrett were selected as architects it remained for Pullman to choose a location for the town. In late 1870 the directors of the Pullman Palace Car Company informally agreed to erect a new, larger plant, one capable of building railroad rolling stock of every description. The company announced its decision to build a new facility, but kept the location secret until after the land had been purchased, in order to curb speculation and avoid inflated land prices.²⁹ Pullman officials took

numerous excursions with the ostensible object of viewing "sites." A. B. Pullman figured prominently in the real estate ruse, even announcing on one occasion that "the prize will not go to South Chicago."³⁰ The company apparently seriously considered St. Louis for a time, but land costs there were considered exorbitant.³¹

A Pullman acquaintance by the name of Colonel Jim Bowen (who had been involved in making the arrangements for President Lincoln's funeral train) was intimately involved in the company's purchase of land for its new car shops. In 1870 Bowen had organized the Calumet & Chicago Canal & Dock Company for the purpose of establishing a commercial and industrial center in the Calumet Lake region, approximately 14 miles south of Chicago. Though this scheme ended in failure, Bowen was well acquainted with the area's real estate market. Acting on Pullman's instruction, Colonel Bowen secretly purchased several thousand acres of land for the company. Altogether, 4,000 acres were bought for \$800,000.³² Announcement of Pullman's location was not made until April 25, 1880.

George M. Pullman and the Origins of the Pullman Palace Car Company

1. The early history of George M. Pullman's career is taken from Joseph Husband, The Story of the Pullman Car (Chicago: A. C. McClurg, 1917, reprint edition, New York: Arno Press, 1972). Once the Pullman Palace Car Company had been established as a successful enterprise, numerous accounts of the George Pullman story were printed, all of which told pretty much the same story. Husband's biographical information on Pullman is essentially a compilation of many of these accounts.
2. August Mencken, The Railroad Passenger Car [Baltimore: Johns Hopkins Press, 1957], pp. 55-74, contains a concise discussion of the first sleeping cars and their evolution from which this section is drawn.
3. Ibid., p. 60. The first patent noted by Mencken in which George Pullman was a co-patentee is the Field-Pullman patent No. 42182 granted on April 5, 1864. Mencken notes that T.T. Woodruff & Company, one of the earliest sleeping car companies, was founded in 1858. The company both built and operated cars, the latter principally in Pennsylvania and on certain of the western railroads. Mencken writes (p. 75):

Of the three great builders of sleeping cars who appeared in 1858 [Woodruff, Webster Wagner and George M. Pullman], Woodruff was the first to get his car into general use, and he was also the first to disappear from the field. His cars were crude, but they were a great advance over the bunk cars they replaced, and by educating the public in the use of the convertible type of car seat, he prepared the way for the luxurious cars that came later.

4. Ibid., p. 67. Patent No. 49992, also co-patented with Field.
5. Husband, Story of the Pullman Car, p. 47.
6. Railway Review 21 May 1869, from "Scrapbooks Misc." Ser. A, Vol. 2, unpagued.
It was reported that the cars were designed in the company's offices in Chicago and that the average time required to turn out a "Palace Car" was four months.
7. Detroit Tribune, 22 October 1875, from "Scrapbooks Misc." Ser, A. Vol. 9, unpagued. This account listed 7 major buildings including a 85x250 foot, three story main shop, a lumber kiln, a dry lumber house and a blacksmith shop.
8. Pullman had developed the "hotel car" in 1867, which provided eating facilities within a sleeping car, and the "dining car" in 1868, which was devoted exclusively to culinary affairs. With the the completion of the transcontinental railroad, Pullman quickly organized the "Pullman Hotel Express" which left Boston on May 23, 1870 and arrived in San Francisco ten days later. A major public relations success, this trip brought the Pullman Company enormous amounts of favorable publicity.
9. Chicago Daily Inter-Ocean, 10 June 1875.
10. National Car-Builder, February 1873. Pictures of this structure exist within the collections of the Chicago Historical Society but it remains

undetermined whether the facilities intended to benefit the employee's cultural lives were actually constructed.

11. Letter entered in the minutes of "Stockholders Special Meeting," held 1 February 1832, in Pullman's Palace Car Company, "Record Book A." pp. 394-395.
12. The Strike at Pullman: Statements of President George M. Pullman and Second Vice-President T. H. Wickes, Before the U.S. Strike Commission (n.p., [1894]), pp. 1-2.
13. Conversation with Florence Loudon Miller, granddaughter of George M. Pullman, Chicago, 29 July 1975.
14. Buder, Pullman, pp. 35-37. See also Almont Lindsay, The Pullman Strike: The Story of a Unique Experiment and of a Great Labor Upheaval (Chicago: University of Chicago Press, 1942), pp. 32-33.
15. A review of another of Reade's novels appearing in the Chicago Times (11 April 1880) recalls that "'Put Yourself in his Place' procured [its author] the honor of threatening letters from various trade-unions."
16. Charles Reade, Put Yourself in His Place, (London: Smith Elder and Co., 1870; reprinted., New York: A. L. Burt Company, n.d.), p. 3.
17. Boston Sunday Herald, 15 January 1882, from "Scrapbooks, Misc.," Ser. A, Vol. 5, p. 134. The Chicago Times of 24 March 1889 carries a biographical

note on George M. Pullman that also mentions the influence of Reade's novel on him ("Scrapbooks, Misc., "Ser. A, Vol. 12, p. 50).

18. Telephone conversation with Liston Leyendecker, Professor of History, Colorado State University, Fort Collins, Colorado, 25 August 1976. Mr. Leyendecker is currently preparing a biography of George M. Pullman.
19. "Saltaire and Its Founder," Harper's New Monthly Magazine, May 1872, p. 327. Compare the following description of Saltaire with later accounts of Pullman, Ill.:

 . . .the present village [is] a beautiful one, all the houses being built of light-colored stone, pleasant to the eye, and handsomely ornamented, the greater part of them being neat cottages, with little plots of green in front and gardens behind, surrounded by neat iron railings, and supplied with all the conveniences of modern domestic life (p. 831).
20. See Moncure D. Conway, "An Iron City Beside the Ruhr," Harper's New Monthly Magazine, March 1885, pp. 495-513.
21. The Story of Pullman (Chicago: n.p., 1893). This pamphlet was distributed to persons visiting the Pullman exhibit at the World's Columbian Exposition, Chicago. A copy of it is located at the Chicago Historic Society.
22. "A Scientific City," Scientific American Supplement, No. 429, 22 March 1834, p. 5840.

23. Pullman Journal, 14 January 1893.
24. Richard Schermerhorn, Jr., "Nathan Franklin Barrett, Landscape Architect," Landscape Architecture 10 (April 1920): 109-110. In the later years of his career Barrett planned, or helped plan a number of town and suburban residence districts, including Birmingham, Alabama, Fort Worth, Texas; and Chevy Chase, Maryland. Barrett additionally became "one of the prime movers" in the formation of the American Society of Landscape Architects, and was elected president of that society in 1903.
25. Buder (Pullman, p. 50) describes the early relationships between Pullman, Beman and Barrett, but does not footnote his source. The article in the Boston Herald appeared 1 August 1881.
26. Biographical information on S. S. Beman is taken from Charles E. Jenkins, "Solon Spencer Beman," Architectural Reviewer 1 (February 1897): 47.
27. Solon Spencer Beman: President of the Illinois Chapter A.I.A., Construction News 22 (October 1904): 291.
28. The "eyewitness" was Irving K. Pond, a draftsman in Beman's employ during the design and construction of Pullman. Pond, "Pullman--America's First Planned Industrial Town," Illinois Society of Architects Monthly Bulletin (June-July 1934): 6.
29. official company records do not mention the decision until 22 July

1880. See Pullman's Palace Car Company, "Record Book A", pp. 349--351, Pullman Collection, Newberry Library, Chicago, Illinois.
30. Chicago Times, 22 February 1880, from "Scrapbooks, Misc.," Ser. A, Vol, 5, p. 72.
31. St. Louis Republican, 25 November 1879, from "Scrapbook, Misc.," Sec. A, Vol 5, p. 59.
32. Buder, Pullman, pp. 25-26. Also see J. Seymour Currey, Chicago: Its History and the Builders, II vols. (Chicago: S. J. Clarke Publishing Co., 1912), 4: 184-133 for biographical information on Colonel Bowen. Chicago Times, 22, February 1880.

Chapter II

Early Development of Pullman

On April 11, 1880, the first public disclosure of the design for the new Pullman Car Works appeared in Chicago newspapers.¹ Although the exact location of the plant remained unannounced, the Chicago Times published a map showing the "Grand Plans of the proposed Pullman Car-Works," complete with the size and function of various buildings in the complex. Apparently plans were in an advanced stage of development by this date since they bear close resemblance to the works actually constructed.

The plans showed the company offices at the front of the plant, flanked by two erecting shops. Seventy-six feet behind these buildings appeared a series of structures with an aggregate frontage of 1,130 feet. Composed of two erecting shops, a varnish room and repair shop, a wood machine shop, engine room, boiler room, iron machine shop, blacksmith shop and coal house, their positions were almost identical to those actually built. Another 75 feet behind these structures were four other buildings, including an erecting shop, a dry kiln foundry and coal house. A description of the Allen Paper Car Wheel Co.'s Works, a company owned by Pullman, with "a frontage of 354 feet and a depth of 150 feet, the central portion being two stories with handsome tower" also appeared.² With the exception of the water tower, of which no mention is made, and the situation of the foundry in the exact position where the hammer shop was ultimately constructed, this early plan was a close approximation of the

main car works layout as built. However, no mention was made of the lumber yards, gas house, Lake Vista, or the workmen's dwellings and community buildings of the town. At this time, according to the Chicago Times, "the location of the proposed Pullman Car Works--except that it is to be in the environs of Chicago--has not yet been determined..."³

On April 24th, two weeks following the public presentation of plans, the construction was announced. Described as being "on the line of the Illinois Central Railroad between One Hundred and Fourth and One Hundred and Eleventh Streets," the Pullman Palace Car Company and Allen Paper Car Wheel Company announced their intention to construct "between 300 and 400 brick cottages for employees of whom over 2,000 will be employed, and it is anticipated that a town of at least 10,000 inhabitants will spring up there."⁴ The Chicago Tribune of April 25th reported that surveyors had begun staking out the site on April 24th and that on the following day, April 26th, ground would be broken for "the most important manufacturing enterprise that has yet been established in Chicago."⁵

Because of the large amount of land purchased by the P.P.C.C. to accommodate its facilities and the legal restrictions in the company's charter, it was deemed necessary to create a special land holding company. Although initially referred to by the press as the "Pullman Land Company," this enterprise was officially known as the Pullman Land Association. Not disclosed to the public until July 1880, the Chicago Times described it this way: "The Pullman Car Company is one thing; the Pullman Car work is another; and now there is the Pullman Land Company --each distinctive except that George M. Pullman is the presiding genius."⁶

The Pullman Land Company was actually a paper fiction established to avoid legal difficulties because the company's charter allowed it to own land sufficient for

the production of their business and no more. On July 22nd, the Pullman Palace Car Company's Board of Directors, accepted 310 acres of land into their holdings to provide for "the shops and the land adjoining it . . ." The Pullman Land Association continued to hold over 3,000 acres of land in the vicinity, while the Allen Paper Car Wheel Co. held deed to its own five-acre tract.⁷ The Pullman Palace Car Company owned all the land occupied by the car works complex north of 111th Street (except for that of the Allen Paper Car Wheel Company), the land occupied by housing and community facilities between 111th Street and some property, including the brick yards, south of 115th Street. The Pullman Land Association controlled surplus land throughout the Lake Calumet region, including the housing north of the car works and the sewage farm some three miles south of 115th Street.⁸ Upon the land holding of these two organizations the shops and town of Pullman were built.

Construction at the Pullman site progressed rapidly during the last seven months of 1880. Extensive land fill operations were required to develop the swampy low-lying farm land into a suitable industrial and housing site.⁹ Several hundred teams of horses hauled blue clay dredged from the bottom of Lake Calumet to facilitate the landfill operations.¹⁰ Although there is little existing information on the actual planning process for the Pullman works and town, there are a few eyewitness accounts which record the construction activity on the site. One of these accounts comes from Irving K. Pond. Pond was closely tied to the initial stages of development at Pullman and years later would come in to his own as a prominent architect of the Chicago School. Pond provides this description:

...the land lay low for miles beyond the borders of Lake Calumet so that for long months the surface was under water. Not until late in the spring of 1880 could progress be made draining the site. No roads or streets could be laid out till later. The shops were the first buildings to be erected; for for the wood working, for the foundry and iron-working, for printing and finishing, machinery was to be installed before work on cars could be commenced.

While these buildings were in process of erection, the water mains, the gas mains, the cables for the arc lights (Incandescent lamps were not practical for the first year or so), the sewers, all were being installed and none of these features could be of use until the gas plant and the pumping stations were in working order. All this work was going on at one time and all the factors at some time in one place.¹¹

Following ground-breaking on May 1880, the shop building continued through- out the rest of the calendar year, with Beman and his staff moving to temporary quarter's near the site sometime in late summer.¹² The contract for construction of the entire car works was awarded to James S. Price and Frederick H. Avers.¹³ By late July over 500 men were employed in the construction of the shops, and wood to be used for car building was already being dried in the lumber yard.¹⁴ Pond states: "Full size details of a building under construction; while details for wood and cabinet work were drawn in the temporary wood working shop, and stone details were laid out by the architectural draughtmen in the company's stone yards or on the job."

He further elaborated on the quality of workmanship: "In spite of the short time in which all this materialized there was not a square foot of shoddy construction, not a wall of plasterboard or stucco, hardly a wooden shingle, but walls were of brick, roofs of slate, all laid by mechanics who took pride in their work. I know this because I worked on the scaffolds with the men, helped them lay out the patterns of brick ornament, some of which we designed on the spot and with them worked out the bond."¹⁵ During construction of the shops (and later the town), most workers lived in the Chicago area and commuted to

Pullman on special trains run for that purpose, although a number were put up in old and condemned sleeping cars in the Kensington area.¹⁵ Eating facilities were provided on the site. The laying of sewers for the shops and town began in August 1830, although plans for the exact method of disposal were not decided upon until the following year.

The construction of separate sewers for surface storm water and sewage was an important aspect of Pullman as a "planned" community. The sanitary integrity of the town was partly dependent on this separation, as it allowed fast and efficient removal of waste material, with little chance for the sewers to "back-up" and cause disease. On June 5, 1882, Benezette Williams delivered a paper to the Western Society of Engineers describing Pullman's sewage system in detail. Published the same year, this paper described the system from its conceptual basis to the actual construction of the sewage farm developed to utilize Pullman's waste in a profitable enterprise. Separate sewer systems were relatively unknown in America at that time and Williams clearly explained why they were chosen.

Pullman is a place for which the separate system is particularly well adapted, and for the following reasons: The site of the town is almost level, much of it not impossible to obtain a gravity discharge to any other body of water than Lake Calumet. This lake is shallow, ranging from 1 to 8 feet in depth. It is about 3 miles long and 1-1/2 miles wide. It drains a small area, and is connected with Lake Michigan by the Calumet River. The river, however, which drains a much larger area than the lake, does not run through the lake, but is connected therewith by a small channel, through which the water flows from the lake to the river, or from the river to the lake, according to the varying conditions of winds and floods.

In the absence of any adequate means of purifying itself, Lake Calumet is wholly unfit for a receptacle for sewage.

The small elevation of Pullman and the great distance to Lake Michigan renders a gravity discharge thereto impossible. When a town cannot get rid of its sewage by a gravity discharge, the alternative is to use pumps. When pumps have to be relied upon, the exclusion of rain water from the sewers becomes almost a necessity, and when the surface can readily be carried off by a system of drains made for that purpose only, as has been done at Pullman, it adds strength to the reasons for fixing upon a separate system, which in this case was adopted for the reasons given independently of its supposed sanitary merits.¹⁷

By September 1880 work had progressed to the point where magazines were referring to the works "...one of the most--if not the most--imposing structures in this country for manufacturing purposes."¹⁸ The Chicago Times, of September 5th reported that over a thousand workmen were involved in construction and that "the foundations for all the shops are laid and the walls of many of them completed. Those of about four hundred cottages are either started or staked out." By October 3, 1880, the number of workmen had risen to 1,500.¹⁹

September 1880 also marked the linking of Pullman to the outside world with transportation systems other than the Illinois Central Railroad. The Chicago Evening Journal reported that:

a branch road has been built from the Rock Island branch at Ninety Fifth Street. . . to Pullman. The Company first bought the land, and then constructed the road through it. The Pullman Company has also dredged a waterway across Lake Calumet to the shallow outlet, which it has deepened into the Calumet River and thus in one week has connected Pullman with the rest of the world, both by land and water routes.²⁰

Construction of shops and houses continued through the fall and into the beginning of 1881. In October, excavation for the foundations of the water tower--a "huge affair"--was begun.²¹

By December the shops were in a condition to allow the first workers exclusively involved in car building and repair to arrive on the site. Edwin Alonzo Benson, the man much celebrated as Pullman's first resident, later described his arrival from the Detroit shops in the Pullman Company magazine:

[I reported] to Mr. A. B. Pullman, Second Vice President of the Pullman Company, whose office was in Chicago, to take charge of car work in the new work at Pullman. I reported to Mr. Pullman the morning of December 17, 1880. He stated that the works were then snowbound and that it would be impossible to go there for three or four days, that in the meantime I should sit at his desk and write out requisitions for tools and supplies. With the exception of lumber, there was not a nail, a screw, or a tool on hand for car work. He said: 'Make out the requisitions and I will approve them.' I wrote requisitions continually for two days.

The morning of the third day, December 19, Mr. Pullman and I went to Pullman Car Works. We were met there by Mr. Duane Doty and together we went over the incompletd shops. Mr. Pullman said the president was determined to commence varnishing cars. I remarked that if he would get the cars in shop I would varnish them.

The transfer pit was completed, but the transfer table was not on the plant. There were no floors laid, no heat, no water in shops, no power, no lighting system and no machinery running. The Exposition Corliss engine and boilers were being installed. Answering a question regarding heat, I told them we would have to put in the floors first, then set up five or six of the largest coal stoves we could procure and use coal fires. Water would have to be brought in pails.

The first section of shop used was at the southwest corner of the transfer pit. . . it has since been replaced by a larger building. . . . On account of there being no machinery running we were obliged to have our work, moulding, posts, roofing flooring, etc. done by the light sash and door machinery used for building construction.

. . . Mr. Dan Martin, who was in charge of construction, was certainly a good friend indeed. There were about thirty practical car builders working on construction waiting for the car works to start up. They were from

all parts of the country. I took them on my pay rolls. . . . After the Iron Machine and Blacksmith Shops were running, but not the wood machine shop (on account of having to put stone foundations under each machine) the President insisted on building six new sleeping cars, the insides to be gotten out in the Detroit Shops and the bodies in Pullman. The first manager, J.H.F. Weirs, reported for duty about three weeks after my arrival. I advised against the building of the bodies of the six cars, on account of no heavy machinery; I told the manager I could build them, only he would have to be responsible for the cost. I . . . procured . . . men from the Detroit shops for heads of departments, and was then instructed not to ask for anymore.²²

Benson and his family moved into 101 Watt Avenue, on January 1, 1881; from that day onward the town's population boomed.

Despite the severe cold, work on the shops and the housing continued. By the first of the year the foundations for the hotel were well under way as

". . .the bitter north wind from the lake, which swept the barren prairie, rendered necessary the building of fires upon the half constructed walls, that the workmen might not freeze while at work, and while the building materials were often buried in drifts of snow and caked ice."²³ In early January, S.S.

Beman departed Pullman for the East Coast with the intent of visiting structures similar to the arcade, a large shopping and community facility for which preliminary plans had already been drawn.²⁴ The Chicago Times reported that

"The problem that [Beman] is now brooding over is how to support a huge iron tank with a capacity of half a million gallons at a sufficient altitude to supply all parts of the buildings with water."²⁵ Clearly, the water tower was a structure which required considerable planning before its upper level construction could begin.

In the first months of 1831, final preparation of the industrial plant prior to the initial operation of the Corliss engine was made. In early January, George M. Pullman announced that J.H.F. Wiers, former General Master Car Builder of the New York, Pennsylvania and Ohio Railroad, had been named Manager of the Company's Chicago works.²⁵ Under his direction the works began the repair, and later the construction, of rolling stock.

On February 2, 1831 the Chicago Journal of Commerce printed a description of the car works, listing those structures completed, at that time, at least insofar as having walls, roofs and the rudiments of the interiors. The office building and main erecting shops; the rear erecting shops (located "across the transfer"); equipment building; wood machine shop; Corliss engine room; boiler house (with wood shavings storage rooms); iron machine shop; blacksmith shop and Allen Paper Car Wheel Company were all described with dimensions and locations closely approximate to those shown on a later insurance map. Also described were a storehouse for dressed lumber with a connecting bridge to the wood machine shop, a dryhouse containing nine dry kilns and two freight erecting shops. The gas house was "near completed" and the water tower's foundation was complete with sewage pumping machinery already in place, though the rest of the structure was still being planned. Construction had not yet started on the hammer shop, which was to be built of corrugated iron, and plans for the foundry were in preparation. Aside from the industrial area, work was completed on the excavation of Lake Vista (this dirt was used to help raise the elevation of the entire town), the Illinois Central passenger depot was built, the hotel foundation was in and about 100 dwellings, along with several boarding houses, were either under construction or already occupied. The Journal of Commerce

article further reported that "The material used in all buildings is chiefly brick, iron and stone, faced with Indiana pressed brick of two colors and trimmed with Berea stone." The entire site received generous praise, in a manner to be often repeated in later newspaper and magazine articles. "The site of these new works. . . has been carefully laid out with reference to taste and beauty in the town location, and the economical adoption to the production of the finished work."²⁷

In late February 1881, notices appeared in Chicago newspaper soliciting 150 car builders, cabinet makers, and coach painters for work at "Pullman's Palace Car Co. at Pullman, Ill. near Kensington, on the Illinois Central R.R., fourteen miles from Chicago."²⁸ On April 2, 1881, less than a year after construction began, the official inauguration of the Pullman Car Works took place. Many dignitaries took a special train to Pullman to witness the event, in which George Pullman's young daughter Florence, played a conspicuous role. As described by the Chicago Tribune:

. . . yesterday afternoon at 4 o'clock, the hand of a little girl touched a wheel, the pent-up power of steam was released, the mighty machinery of the great centennial Corliss engine moved. . . and Chicago's newest, and one of the greatest, manufacturing enterprises leaped into life.²⁹

Over \$1,300,000 had so far been expended in the development of the town and works, but the company stated that the complex was far from complete.³⁰ Some 1,250 men were employed at Pullman, with plans for increasing the number to 2,500 men on the construction crews and 2,000 in the car building operation upon the advent of good weather.³¹

With the Centennial Corliss engine running, the industrial plant at Pullman began functioning in the manner for which it was originally designed. Through its extensive shafting, the Corliss powered almost all the machinery in the main body of the car works. Much construction remained to be done but its operation signified the plant's beginning as a major producer of America's rolling stock.

Footnotes

Early Development of Pullman

1. Chicago Times, Chicago Tribune, 11 April 1880
2. Missouri Republican, 13 April 1880, from "Scrapbook Misc.," Ser. A, Vol. 5, p. 75.
3. Chicago Times 11 April 1880; The public was further notified in the Times article that "it would be idle to speculate as to the future location of these works. The officers visit new sites almost daily;" and ". . . the contracts have been let as to all important matters, and as soon as a location is decided upon, work will be begun without a moments delay." The description of the works refers to "numerous turntables" for "tracks running between the various shops..." The shops, as built, used no turntables in the construction of cars.
4. Chicago Evening Journal, 25 April 1880, from "Scrapbook Misc.," Ser. A, Vol 5, p. 74. This article estimated that "The improvement. . . will cost, aside from the land, \$1,250,000" and that "The works are to be completed by October 1 next." Both estimates proved too conservative.
5. Chicago Tribune, 25 April 1880, from "Scrapbooks Misc.," Series A, Vol. 5, pp. 85-87. This article also reported the foreman's housing was to be built just south of the plant's entrance on 111th Street and that the workingman's housing was to be "...north of the works." The 25 April 1880 InterOcean

also states workers' housing would be "...located north of the works."
Thus, it appears that housing north of the car works was always envisaged.

6. Chicago Times, 11 July 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 93.
7. Directors Special Meeting, Record Book A, pp. 350-351. Chicago Tribune, 3 April 1881, from "Scrapbooks Misc.," Series A, Vol. 5 pp. 4-5. This article states that 308 acres of land were owned by the Pullman Palace Car Company; 3,187 acres were owned by the Pullman Land Association; and 5 acres were owned by the Allen Paper Car-Wheel Manufacturing Company. The discrepancy between the Board of Directors' approval of the P.P.C.C. purchase of 310 acres and the later report of their owning 308 acres might be explained by further notes of the 22 July 1880 Board of Directors meeting. It is stated that the sale of some 10 acres was still being negotiated for with outside interests. Perhaps two of these acres proved unobtainable.
8. "D Doty," handwritten record book kept by Pullman's town agent Duane Doty, Historic Pullman Foundation Archives, Chicago, Illinois, p. 42. A report dated 15 October 1882 on the status of housing in Pullman clearly indicates the P.P.C.C. owned the land between 111th Street and 115th Street, while the P.L.A. owned the houses between 103rd Street and 108th Street. The report further describes the housing at the brickyard as being owned by the P.P.C.C. Records of the Pullman Land Association in the Newberry Library (Pullman Collection, "Pullman Company-Real Estate" file, Newberry Library, Chicago, Illinois) indicate that as of 1891, the P.L.A. controlled the brickyard housing but exactly when this change of ownership occurred is unclear. These same records show the account of the Spanish-American Curled

Hair Company, an enterprise located at the corner of 116th Street between Fulton and Stephenson which went bankrupt in 1834. This would indicate the P.L.A. was that company's landlord prior to its demise.

Although the exact relationship between the P.P.C.C. and the P.L.A. remains undetermined, the P.L.A. played an active role in the land development of the Calumet region. Maps of the P.L.A.'s holdings for the years 1894 and 1905 exist in the archives of the Historic Pullman Foundation and the Beman Committee of the Pullman Civic organizations which clearly show its vast holdings throughout the area. The "Pullman Company-Real Estate" file also shows that the company owned land between 78th and 79th Street at Anthony Street and 14 tenements (including one with 25 rooms) on "Burnside" near 95th Street. Apparently, the P.L.A. was actively involved in landlord operations. According to the Chicago Times, 7 Jan. 1881 ("Scrapbooks Misc.," Ser. A, Vol. 5, p. 120), the P.L.A. was to ". . . occupy the building now in course of erection just north of the Allen Works."

9. Irving K. Pond, "Pullman - America's First Planned Industrial Town," Illinois Society of Architects Monthly Bulletin (June-July 1934): 7.
10. Chicago Times, 10 November 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 117; Chicago Journal of Commerce, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 137.
11. Pond, "Pullman", p. 7: The Railway Age, 20 May 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 79. On 27 April 1880, Max Hjortsberg, the man responsible for Pullman's truckage design, was fatally struck by a

locomotive near the construction site of Pullman. Born in Stockholm in 1826, he worked in Hull, England, before coming to the United States in 1854. Following his death, he was referred to as "construction engineer and architect for the Pullman car works now in process of erection." The important role he played in designing Pullman is perhaps underscored by this statement and his untimely demise may be responsible for the sketchy record of the industrial site published in contemporary engineering journals.

12. "Pullman," Western Manufacturer, p. 214; and Pond, "Pullman," p. 7. Previous to this, Beman and his staff had offices in the old Pullman Building in downtown Chicago. As soon as the Administration Building was roofed over, the architectural staff was moved into quarters on the second floor under the clock tower. They later moved to the Arcade Building where they operated until the spring of 1884, when Beman established an office in the new Pullman Building on the corner of Adams and Michigan in downtown Chicago.
13. Railway Review, 24 April 1880.
14. Industrial World, 22 July 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 36.
15. Pond, "Pullman," pp. 6-7.
16. Pond, "Pullman," p. 6; Union Stock Yards and South Chicago Weekly Sun from "Scrapbooks Misc.," Ser. A, Vol. 6, 1831-1882, p. 20; A. T. Andreas, History of Cook County, Illinois, From the Earliest Period to the Present Time (Chicago: By the Author, 1884), p. 511.

17. Benzette Williams, "The Pullman Sewerage," Journal of the Association of Engineering Societies, 1 (June 1882): 311-319.

18. Industrial World, (September 1880), from "Scrapbooks Misc.," Ser. A, Vol 5, p. 111.

19. Chicago Times, 5 September 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 95; Chicago Tribune, 3 October 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 115.

20. Chicago Evening Journal, 15 September 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 103.

21. Chicago Tribune, 3 October 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 115.

22. Edwin Alonzo Benson, "The First Car Work at Pullman," Pullman Car Works Standard, 2 (July, 1917): 12 and 2 (August, 1917): 12. Interestingly, Benson only lived in Pullman until November 1881 when he was transferred to St. Louis.

23. Industrial World, 5 January 1881, from "Scrapbooks Misc., Ser. A, Vol. 5, p.120; "The Arcadian City of Pullman," Agricultural Review 3 (January 1883): 72.

24. Industrial World, 5 January 1881.

25. Chicago Times, 7 January 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 120.
26. Chicago Evening Journal, 4 January 1881, from "Scrapbooks, Misc.," Ser. A, Vol. 5, p. 118.
27. Chicago Journal of Commerce, 2 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, pp. 135-137. Shops were supposed to be on the east side of the second transfer pit. In reality, only one shop was built there in the early 1880s. As shown on the 1885 map, the south facade of the industrial plant consisted of four erecting shops, grouped 1-2-1 and separated by two transfer tables. As shown on a map dated 11 April 1881 in the Burnham Library drawing of Pullman, the two shops adjoining the easternmost transfer pit are labeled freight erecting shops. However, only one of these was on the east side of the second transfer pit.
28. Chicago Tribune, 20 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 139.
29. Chicago Tribune, 3 April 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, pp. 4-5.
30. Directors Special Meeting, Record Book A, pp. 354-365, held 17 March 1881; and Chicago Tribune, 3 April 1881.
31. Chicago Times, 3 April 1881.

Chapter III

Construction of the Town

Following the arrival of Pullman's first residents in January 1881, the town grew steadily for the next several years. Encompassing both dwellings and community facilities, the town was to provide the P.P.C.C. and its auxiliary industries with a controlled living environment for their workers. Often referred to as a "model" community, the town was described in the February 7, 1881 Chicago Journal of Commerce,

. . . about one hundred dwelling houses are under way, a part completed and occupied; also fifteen different styles of architectural construction in the dwellings. They are all provided with gas, water and sewage connections in the most complete manner, and separate for each family. . . . It is the intention to erect 500 additional dwellings the coming summer. All are built of brick with stone trimmings and slate roofs and are models of taste. These dwellings have a cost of from \$1,000 to \$2,400 each, and large number are to be built on boulevard at a cost \$3,000 to \$7,000. . . . A Market House is to be erected, also a block to contain 50 stores. . . the foundation for a hotel is already laid, and a most substantial depot is already completed.¹

This report is not quite accurate, because each individual family did not have its own water facilities; however, the general nature of the company's statements concerning the town is typified in this account, though it is more straightforward and concise than many others.

Some of the best evidence relating to initial construction in the town is on a map prepared by the Engineering Department of the P.P.C.C. dated April 11, 1881.² The layout indicates the first houses built were on Watt, Fulton and

Stephenson between 111th and 112th Streets, including three tenements along Fulton. The hotel, arcade, and boarding house on the north side of 113th Street between Fulton and Stephenson are also clearly labeled.³ This drawing also shows railroad tracks running through the town's site with a North/South orientation. Most likely, they were used in building the town. The actual construction of the town was carried out by Frances Agnew and B. A. Cox. Industrial Chicago stated, "In 1880, Mr. Agnew entered into a contact of partnership with Mr. B. A. Cox, his brother-in-law, and for the following ten years, they did a very extensive business, particularly at Pullman, where they built many beautiful residences, schoolhouses, stores, and other structures."⁴

Of the 600 houses the company were to be built that season, at least 50 had their foundations laid by early July.⁵ By September, bricklayers were employed on the Arcade, and by the end of October, the Hotel Florence was on the verge of opening.⁵ The Chicago Hotel World described the structure as costing "around \$100,000" and the furniture and fixtures as \$30,000 more. Notice was also made of the complete gas cooking apparatus and November 1, 1881 was given as the probable date of the hotel's opening.⁷ Later in the month, on November 21, school was first held in Pullman in the new depot at Fulton Avenue and 111th Street.⁸ By this time, housing was available for some of the employees working for companies other than the P.P.C.C. As reported in the November 1881 Western Manufacturer, the Allen Paper Car Wheel Co. had residences ". . . attached to the North of them. . ." and the Chicago Steel Horseshoe Co. (later Chicago Foundry and Drop Forge Co.) had ". . . dwellings for their employees."⁹ Further indication of plans for building more of this kind of housing came in the Chicago Tribune of November 27, 1881 which stated, "The Pullman Company is about to begin the erection of 750 cottages north of the boulevard at Pullman."¹⁰

In December 1881, notice was given in the Chicago Press that rents were to be raised at Pullman approximately 20% after January 1.¹¹ However, this rumor was declared "entirely erroneous" by Duane Doty, who explained "a number of families who have been permitted to occupy half finished houses at a nominal figure are notified they will have to pay the regular rent [when the house is complete]."¹² In line with the housing units apparently began providing a fast return on their investment. So fast, in fact, some started paying off even before completion.

In late November, it was reported that the livery stable, church, and markethouse had reached the point where they had all been roofed in.¹³ In January 1882, hopes were high that a grocery store would open in Pullman, but the plans fell through, and the town's people were forced to continue relying on a supplier from Kensington. Further light was shed on the nature of Pullman's food supply prior to the opening of the market hall when the March 24, 1882 Chicago Times, stated, "Mud has been so deep in Kensington that all locomotion, except where sidewalk exist, has been suspended. The grocery wagon, which made daily trips to Pullman, is now anchored in the soil and its proprietors have been obliged to deliver goods by means of a chartered train."¹⁵ Though by March several streets in Pullman had been macadamized, there was still difficulty in transversing other roads.¹⁶

During the spring of 1882, progress continued on the construction of the town. In March, work on the park near the hotel and arcade, neared completion.¹⁷ By April, work started on the permanent school house at 113th Street and Pullman Avenue.¹⁸ In May, the Arcade building was reported nearly ready for occupancy,

and by early June, stores in it were operating.¹⁹ Also in May, the Greenstone church was announced to be nearly ready for "divine worship," and the athletic island was reported under construction.²⁰

During this spring, accounts of the number of houses constructed, or being constructed, were published, as well as figures on the number of workmen involved in the town's construction. On April 14, the InterOcean reported ". . . 841 houses finished or drawing to close at Pullman. . ." with foundations being laid for 550 more.²⁰ On April 25 the Chicago Tribune reported "several hundred men are

employed by the contractors [who were building the town]" and 547 families, totalling 3,641 persons, were residents.²² A week later, the Tribune stated there were 615 completed cottages, 240 very nearly completed, and foundations had been laid for 500 new ones "directly south of those already finished."²³

Because of conflicting accounts on the number of houses it is perhaps best to rely on Duane Doty's notebook, now in the archives of the Historic Pullman Foundation. In an entry dated October 16, 1882 under the heading "Houses", Doty provided the following information:

Total of all houses finished and unfinished	-	1401
Occupied	-	773
Total rentals for year on October rates 1882	-	\$158,176
Total rentals for October	-	\$ 13,181.37

DETAILS

P.P.C. Co.'s houses between 111th and 115th Streets

Finished	-	585
Unfinished	-	293
Occupied	-	583
Unoccupied	-	2

P.P.C. Co's houses at brickyards

Finished	-	37
Occupied	-	37

Pullman Land Assn.'s houses between 103rd and 108th Streets

Finished	-	253
Unfinished	-	223
Occupied	-	159
Unoccupied	-	104

All houses in the city

Finished	-	835
Unfinished	-	516
Occupied	-	779
Unoccupied	-	106

The unoccupied houses at the Foundry are but just finished. The difference between the total number of tenements here reported, and the total reported in a former statement is occasioned by the omission of eight flats not to be built this season and the conversion of six others into a school house and stores. The brickwork for all the new blocks will be finished by the first of November and before wintry weather comes will be roofed in and enclosed, so that inside work can go on without interruption.²⁴

By the end of 1832, there was little in the town besides additional housing, which still needed to be built. The most important unfinished structures was the school. In September 1832 it was announced that the school was to be completed by the middle of November; it actually took until the end of February 1833.²⁵ Prior to the opening of the new \$40,000 facility, classes were held in the Pullman Depot, freight depot, and market hall.²⁶ In early March 1833, notice was given that the casino was almost complete.²⁷ As Irving Pond stated, "when in the summer of 1833, I left Mr. Beman for an interval (a year of travel and study abroad), the town of Pullman was an accomplished fact. . ."²⁸

1. Chicago Journal of Commerce, 2 Feb. 1881, from "Scrapbooks Misc.," Ser. A., Vol. 5 pp. 135-137.
2. "The Town of Pullman Illinois," Microfilm Roll #33, Drawing 30 Burnham Library.
3. Interestingly, all these buildings were constructed following this plan, as shown on HAER drawings ILL-4-1885. The map used by Richard Ely, and represented on drawing ILL-4 ca. 1881 Presentation Map shows the exact same layout for the buildings appearing on the 11 April 1881 map, but the rest of the residential area is blocked out in structures very different from what was ultimately built. From this, it might be surmised that the plans for the town went through a major revision sometime after April 1881.
4. Industrial Chicago, Vol. 1, p. 664.
5. Union Stock Yard and South Chicago Weekly Sun, from "Scrapbooks Misc.," Ser. A., Vol. 5, p. 16.
6. Chicago Times, 24 Sept. 1881, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 67; and Chicago Hotel World, 22 Oct. 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, pp. 81-82.
7. Chicago Hotel World, 22 Oct. 1881. In the Hotel World of 5 Nov. 1881 (Scrapbooks Misc., Ser. A, Vol. 6, p. 85), it said "The Hotel Florence at Pullman was opened on Thursday of this week..."
8. Andreas, History of Cook Co., p. 620-621.
9. Western Manufacturer, Nov. 1881, p. 215-216.
10. Chicago Tribune, 27 Nov. 1881, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 95.
11. Chicago Times, 14 Dec. 1881, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 101.
12. InterOcean, 27 Dec. 1881, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 113.
13. Chicago Times, 24 Dec. 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 112.
14. Chicago Times, 7 Jan. 1882; and Chicago Times, 10 Jan 1882; from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 123.
15. Chicago Times, 24 March 1882, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 171.
16. Chicago Times, 4 March 1882, from "Scrapbooks Misc.," Ser. A., Vol. 6, p. 169; In Industrial Chicago, The Building Interests, Vol. 2 (Goodspeed Publishing Co., Chicago 1891, pages 172-173), two kinds of pavement used in Pullman are described, 1) 9 inches of furnace slag covered with 4 inches of Joliet Stone, and 2) 9 inches of slag or broken stone covered with 4 inches of crushed limestone.

17. Chicago Times, 15 March 1882, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 170.
18. Montreal Herald, 3 April 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 172; the Chicago Evening Herald of 7 June 1882, "Scrapbooks Misc.," Ser. A, Vol. 7, page 5 erroneously reported the school site as 114th Street and Pullman Avenue.
19. Railway Review, 6 May 1882; and Chicago Tribune, 17 May 1882, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 182. This article also describes how the garbage of the town is shipped to a nearby pig farm where it results in a profit of over \$3,000 a year.
21. InterOcean, 14 April 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6 p. 173.
22. Chicago Tribune, 26 April 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 175. Also states "Thirty-two frame cottages have been erected near the brickyard, and rent for \$6 per month.
23. Chicago Tribune, 3 May 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 180.
24. "Duane Doty", p. 42.

In the History of Cook County, Andreas states "...there are two rooms used for school purposes which have been in operation since the fall of 1882, in what is known as the foundry building.... These two rooms are maintained to furnish education advantages to scholars under the fourth grade." In regards to the number of houses in Pullman, he stated, "There are 1,520 brick tenements in houses and flats [in Pullman]."

25. Chicago Times, 10 Sept. 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 52; and Chicago Tribune, 28 Feb. 1883, from "Scrapbooks," Town of Pullman, p. 27.
26. Chicago Tribune, 28 Feb. 1883.
27. Chicago Times, 1 March 1883, from "Scrapbooks," Town of Pullman, page 27.
28. Pond, "Pullman" p. 8.

Chapter IV

Auxiliary Industries and the Development of the Water Supply System

From the town's inception, the Pullman company made many statements concerning the establishment of industries other than the P.P.C.C. car works within the Pullman vicinity. Some of these companies, such as the Allen Paper Car Wheel Co. and the Union Foundry and Pullman Car Wheel Works, played a major role in Pullman's car production system. Others played a minor part in the P.P.C.C. operation, and some had no particular relation to rolling stock manufacture at all.

The following represents all these auxiliary industries with short descriptions of their businesses. Although legally many of these firms existed separately from the P.P.C.C., all (except the Allen Paper Car Wheel Co.) were situated on the P.P.C.C.'s or the Pullman Land Association's property and, consequently, were under George Pullman's control.

Prior to 1885, there were four major auxiliary industries located north of 111th Street in Pullman. As previously noted, the Allen Paper Car Wheel Co. began construction of their Pullman factory in 1880 to provide wheels for Pullman's passenger cars.¹ The Union Foundry and Pullman Car Wheel Works were organized in the Spring of 1881, under an agreement between the already existant Union Foundry Co. of Chicago and the P.P.C.C.² By mid-August 1881, the roof was being placed on the foundry, and by the following June, the complex was in operation.³ The company produced many architectural castings, as well as cast iron wheels used on Pullman freight cars. In 1888, the Pullman Company took

over full control of the foundry's operation.⁴ Located on the shore of Lake Calumet, the Pullman Iron and Steel Company was the third auxiliary corporation established north of 111th Street. Founded in October 1883, this firm utilized scrap iron and steel to produce "bayonet" railroad spikes, as well as the bar metal used by the P.P.C.C.⁵ The company's building was fabricated out of iron sections made in Pittsburgh and erected east of the roundhouse near Lake Calumet.⁶ The mill was in operation by April 1884.⁷

The final auxiliary industry established north of 111th Street did not exist as a separate corporate entity, but was only known as the "Gas Works". Situated directly east of the rear erecting shops, the works operated under the direct control of the P.P.C.C., supplying all the gas used for lighting and fuel in the town. Utilizing the basic Lowe system of water gas production, whereby superheated steam and naphtha are passed over incandescent coal to create a gas free from ammonia, carbonic acid and sulphur, the P.P.C.C. sold its product to all the residents of the town at a profit.⁸ During the first part of 1881, the "Gas Works" went into operation, and were so successful, that by September 1882, the company decided to expand its capacity by constructing an extension to the original gas production facilities.⁹ In October 1882, Duane Doty recorded the total cost of the Gas Works and mains, including the new apparatus and structure, as \$107,000. This included over 42,000 feet of 2 inch to 8 inch piping and over 1,050 gas meters.¹⁰

South of 111th Street, many enterprises were established, the earliest was the Chicago Drop Forge and Foundry Company on Kensington Avenue, near the Illinois Central tracks. First referred to in August 1881 as the Dunning Steel Horse

Shoe Company, it was later referred to as the Chicago Steel Horse Shoe Company, and finally, the Chicago Drop Forge and Foundry Company.¹¹ Among its original stockholders were George M. Pullman and Marshall Field.¹² Aside from steel horseshoes, the Chicago Tribune described the company's product as ". . . steel shears, scissors, carriage hardware, and sewing machine castings."¹³

Northeast of the Chicago Drop Forge and Foundry Company was the Spanish-American Curled Hair Factory, a company founded in the summer of 1832 and involved in the production of stuffing for mattresses and seats.¹⁴ South of the brickyards, the Illinois Terra Cotta Lumber Company began manufacture of special tiles made from a mixture of mud and sawdust in 1835.¹⁵ Along the southwestern shoreline of Lake Calumet, the 1886 Rascher Insurance Map of Pullman shows the Knickerbocker Ice Company's ice house, as well as facilities belonging to J. P. Smith and Company. These ice companies utilized portions of the brickyard labor force left idle during the winter months.¹⁶ Also along the shore of Lake Calumet, but between 113th Street and 114th Street, the Pullman Company established the Pullman Carpenter Works. According to data provided on the 1886 Rascher's map, the carpenter works were built in 1834. In the "Arcadian City of Pullman," a large carpenter shop is described as being established to provide for machining the larger pieces of woodwork required in the construction of Pullman's housing.¹⁷ Though it did not contribute to the production capabilities of Pullman, the operation of a coal yard was also important, especially for those citizens who only used gas for lighting. In regard to this, the Chicago Sunday Herald of February 12, 1882, stated "Messrs. Dyer and Clark have established an extensive coal yard at Pullman."¹⁸ It is presumed the coal yard was located south of 115th Street at the Illinois Central

Tracks, where a coal yard is shown on the April 11, 1881 map of the town drawn by the P.P.C.C. Engineering Department.¹⁹ The existence of the Dyer and Clark establishment was confirmed in the June 28, 1882 Chicago Times, which reported the firm had been assessed \$1,000 for personal property holdings.²⁰

The aforementioned enterprises were all business ventures which actually operated in the Pullman vicinity and for which documentary evidence exists. The following projects are referred to in numerous newspaper accounts; however, no documentary evidence of their actual existence or operation was found. The first of these was the Howard Locomotive Works, an enterprise initially referred to on January 20, 1881 in the Industrial World, "It seems now to be pretty well settled that a locomotive works will be established at Pullman...."²¹ In the following year, Railway Age (March 10, 1881), Chicago Times (October 20, 1881), and Industrial World (November 3, 1881) all referred to the imminent construction and operation of a locomotive works in the Pullman vicinity. The Chicago Times went so far as to say, "The site chosen is...at the crossing of the Illinois Central and the South Chicago branch of the Rock Island Railway between Ninety-fifth and Ninety-ninth Street. The grounds have been laid out for ample shops, residences for operatives, streets and parks."²² Although the Chicago Sunday Tribune of 27 November 1881 reported "The Howard Locomotive Works will be erected on the northwest quarter of Section 11 at a cost of \$1,250,000," no evidence of the Howard Locomotive Works physical existence surfaced in this study.²³

In July 1882, the Chicago Tribune reported "The Suspension Car Truck Manufacturing Company will at once erect extensive works, at Pullman, which will employ over 700 men. . .land comprising twenty acres, just north of the Pullman car shops, has been secured."²⁴ The Railway Age of August 3, 1882 stated the company was being organized with a capital stock of \$300,000 and that Albert B. Pullman was one of the incorporators. The article further described the suspension car-truck as possessing "...remarkable qualities for diminishing the shock to cars in rounding curves..."²⁵ The September 1, 1882 Chicago Times referred to the plant as producing 100 car-trucks a day and employing about 100 men, however, this study uncovered no further evidence of the Suspension Car-Truck Manufacturing Company's existence after Sept. 1882.

Other unrealized plans of the Pullman Company included a "...fashionable and exclusive. . ." town between 95th and 99th Streets and the Rock Island and Illinois Central Railroad, as well as a summer resort hotel in Hyde Park along Lake Michigan.²⁷ In early 1881, rumors were also printed concerning George M. Pullman's involvement in dealings regarding a planned community bordering on Lake Michigan.²⁸ Finally, a sole reference to the Chicago Rawhide and Belting Works was made by Benezette Williams in his article, "The Pullman Sewerage."²⁹

The Brickyards

The establishment of the Pullman brickyards lead to many erroneous statements as to the reasons for selection of the town's site, and the origin of the brick used in construction of its buildings.³⁰ Contrary to a statement made in Industrial Chicago, Vol. 1, claiming "The Pullman brickyards were established prior to the beginnings of that town, and the bricks manufactured there were used in the erection of all the buildings in the magic city...",³¹ in fact, the brickyards were not established until the early part of 1881. On February 20, 1881, the Chicago Tribune reported:

Brickyards covering twenty acres, and capable, of turning out 25,000,000 of [sic] bricks a year are to be set to work under the auspices of the Pullman Palace-Car Company. The clay will be provided by dredging the lake. Between 300 and 500 men will be constantly employed and the machinery will be run by steam. The plant will cost \$40,000.³²

The Union Stock Yard and South Chicago Weekly Sun of July 2, 1881 explained how Pullman came to build the yards:

The company has two powerful steam dredges at work on the Calumet Lake, widening and deepening the channel, and was using the soil for filling up and leveling the place. The soil brought up from the bed of the lake is free from sand and is a light blue clay. Experiments were made and it was

demonstrated that the clay was peculiarly fitted for brick-making. Yards were laid out and the material worked, and a superior quality of sewer brick is the result.³³

Organized and supervised for their first 16 months under the direction of Mr. D. T. Whiting, the brickyards operated until November 1881, when they were shut down for the winter.³⁴ During their first year, they produced approximately 8,000,000 bricks.³⁵

In the spring of 1882, a large number of houses were built in the immediate vicinity of the brickyards and approximately 150 Canadian laborers were brought to the site to begin work.³⁵ The company claimed they had "...found it impossible to secure a sufficient number of skilled brick makers and has been obliged to go to Canada for workmen..."³⁷ However, as related in the Chicago Tribune of May 20, 1882, it appears these Canadians were brought in as part of a "...scheme to offset the demands of the Chicago Brick Laborers Union".³⁸

Apparently the Pullman brickyards were one of the few operating in the Chicago area during the early summer of 1882 and hundreds of thousands of brick were sold on the open market at \$9.00 per thousand.³⁹

At the end of 1882, the yards had eleven brick machines in use, with a total capacity of 220,00 brick per day, two engines with a total capacity of 250 Horsepower, and a labor force of 250 men.⁴⁰ In October, Duane Doty recorded the number of bricks made in 1882 as 18,350,000, with a profit of \$55,695.03, or 50% on the brickyards' cost of operation.¹⁴ The brickyards continued production until the beginning of the 20th century.

In retrospect, it can be ascertained that practically none of the original car works was built of Pullman bricks, although the vast majority of housing facilities could have incorporated it. However, all architectural "facing" brick must have come from elsewhere.

Sewage Farm

In light of George Pullman's desire that the town of Pullman yield 5% on its investment, it is not surprising that even the removal and disposal of sewage represented a profit-making enterprise. As related in Benezette William's paper, in February 1881 the company decided that sewage would be removed to a "sewage farm" some three miles away, and there utilized in the fertilization of crops. On February 3, 1881, the Chicago Times reported that bids were being accepted for cast iron pipe to be laid for carrying Pullman's sewage to a sewage farm "situated at a distance of three miles."⁴³ By October 18, 1881, the sewer pipe was in place and the sewage pumps were put into operation. Although this was not the first project of its kind in America,⁴⁴ the severity of the nation's sanitation problem and the novelty of Pullman's solution was such that it attracted much attention from newspapers and professional journals.

As previously mentioned, two separate systems of sewers, one for surface run-off and one for human waste, were built at Pullman. The atmospheric water was to go". . .from roofs and streets, through one system of pipes directly into Lake Calumet," while vertified pipe leading from the tenements and cottages to a large reservoir underneath the water tower provided immediate removal of human waste from the town's living and working areas.⁴⁵ To insure that sewage was

properly and completely removed from the houses to the water tower receptacle, the company used the Durham System of House Drainage, a system distinguished by the claim that "all water closets adjoining the soil pipe are supported directly from the soil pipe and are entirely independent of the floor for support." The system utilized upper piping of standard wrought iron, lap-welded steam pipe coated with asphalt, and drains of dipped cast-iron gas pipe. Soil pipes were supported directly by the drains into which they were screwed by means of an elbow connection with walls or partitions. According to the Engineering News and Contract Journal: "The complete system is an apparatus which is entirely independent of the building in Pullman, the system safeguarded against cracked sewer pipe and the unsanitary conditions this could cause."⁴⁷

The sewerage system consisted of 24,312 linear feet of sewers, varying from 4 inches to 18 inches in diameter, with the majority 6 inches in diameter.⁴⁸ Sewers led to the foundation of the water tower and were designed so that sewage would quickly be transferred to the receptacle without an opportunity for sewer gas to be created.⁴⁹ The sewage entered a 200,000 gallon reservoir (by 1893 it had been enlarged to 300,000 gallons) at a depth of 16 feet below grade and was stored there until pumped to the sewage farm.⁵⁰ Ventilation was provided by flues made of 12 inch sewer pipe built into the eight masonry buttresses of the tower and rising to a height of 165 feet above ground level.⁵¹

Directly above the sewage reservoir, at a depth of ten feet below ground level, were the Cope and Maxwell sewage pumping engines, each having a capacity of pumping 2,500,000 gallons every 24 hours.⁵² These engines pumped the collected sewage to the 140-acre farm, located approximately 3 miles southwest

of Pullman, in 20-inch cast iron mains.⁵³ Upon reaching the farm, sewage was screened through a 1/2-inch mesh (which prevented any large objects from fouling the system) and then distributed on the fields by a system of pipes and hydrants which covered the farm in a regular pattern.⁵⁴ Distribution was regulated by means of valves and the sewage mixed with the soil by plowing.⁵⁵ Crops, including onions, potatoes, cabbages, celery, beets, parsnips, carrots, sweet corn, and squash, were grown where the sewage had been placed and then sold at the Pullman Market at a profit. About 15 acres of the farm were set aside as "filter beds," designed to take surplus sewage when it was deemed inadvisable to place it on the crops. These "filter beds" were supposed to transform the sewage into clear, pure water prior to run-off into Lake Calumet.⁵⁶

Although numerous claims were made for the Pullman sewerage system (an article appearing in the Agricultural Review boasted that, "Mr. Pullman has practically solved a question that is of growing concern to every large city. . . . This is the best sanitary system employed in the world."),⁵⁷ there appears to be some discrepancy between what the company claimed and what actually transpired. Though the collection of sewage under the water tower appears to have been effected quickly and efficiently through the use of the separate sewer system, the operation of the sewage farm proved less successful.

Engineering News of January 12, 1893 reported on the operation of the sewage farm at Pullman, presenting a statement by Duane Doty as well as testimony from three engineers (all members of the American Society of Civil Engineers), a chemist for the Massachusetts State Board of Health, and representative of the journal, all of whom visited the farm sometime between 1887 and 1892. In a letter to Engineering News dated November 28, 1892, Doty wrote:

The sewage when not needed upon the fields of the farm is run onto the filter beds, and these filter beds are plowed up four or five times a year, so as to loosen the soil and expose as much of it as possible to the air. At times, all the sewage is used upon the farm, and in wet weather, not more than half of it. Some seasons have taken all the sewage upon fields. At rare intervals only, when it has been necessary to clean the receiving tank at the farm end of the iron main, is raw sewage run into Calumet Lake, and then for very brief periods, and not enough of it to do any harm.

George H. Benzenberg, City Engineer of Milwaukee, Wisconsin, had a conflicting opinion:

. . .I know as early as previous to 1887, a large amount of crude sewage was run into Lake Calumet. This I found to be the fact upon a visit to the farm, and which finally the superintendent admitted and excused by saying it was necessary to do it order to save the crops. . . .

This was corroborated by Mr. Rudolf Hering of New York who visited the farm in 1886 and 1887, and reported large amounts of crude sewage had been run into the lake. Mr. C. A. Allen, City engineer of Worcester, Massachusetts, described the condition of the filter beds at the time of his visit in 1887, writing:

We found that the sewage was being discharged upon the filtration area, the first section of which was covered with sludge to a depth of about a foot. The sewage was running over this, to the section which was partially covered with ice and then over the remaining area, which was entirely covered with ice, and was finally discharged into the effluent trench without having been filtered in the least. The entire area was completely covered with sewage, and there was evidently no filtration taking place, as about the same quantity passed off the lower end of the beds as was discharged upon the upper end. The manager of the farm was away, but we were given the following facts by his assistant which we subsequently verified: The farm is run for the purpose of making money, the purification of the sewage being a secondary consideration. During the summer months, when vegetation has received all the sewage it will bear, it is simply turned into Lake Calumet in its crude state.

Allen Hazen of the Massachusetts State Board of Health visited the farm in October 1891 and confirmed these observations:

. . . [a man who had worked on the farm for several years] told me that with the application of sewage, worms developed in the soil and destroyed the crops, and for this reason, no sewage had been applied for two or three years. . . . The sewage of the entire town was being turned directly into Lake Calumet, from which quantities of ice for Chicago are cut.

The disposal of sewage into the lake was noticed by local residents as well as by visiting engineers and chemists. A newspaper article in the late 1830s reported that the citizens of Riverdale, the community closest to the farm, were "up in arms" over the unbearable stench created by the Pullman Company's means of sewage disposal.

The evidence seems to indicate that the Pullman Company was essentially interested in profits and not sanitation, despite claims to the contrary. As late as 1893, Doty insisted:

one thing is certain, the result of surface irrigation of land is almost a complete purification of the sewage. . . . Within half a century not a state in the Union will permit any sewage to enter lakes or running streams. Had legislative bodies a knowledge of the dangers attendant upon polluting waters with sewage, the custom would be stopped at once.⁵⁸

In 1882, Benezette Williams had plainly stated why Lake Calumet was unfit as a receptacle for sewage but that apparently was overlooked in subsequent years. With regard to sewage farming as a means of sewage disposal, Engineering News cautioned readers that "because profit is put before purification at Pullman, it does not follow that sewage purification by means of board irrigation is in any degree a failure, it often being a useful method or adjunct of sewage disposal."⁵⁹ Still, the method faded from use until the recent revival of "sludge farming" in some communities of the Midwest.

Lake Calumet Improvements

The Pullman Company repeatedly referred to the great advantages the industrial site of Pullman retained because of its location on the shores of Lake Calumet. As late as 1893, in the publication of Mrs. Duane Doty's book, The Town of Pullman, it was claimed that Lake Calumet and the Calumet River would provide a passage way to Lake Michigan and great commercial benefits would be occurred. However, all evidence indicates such a conveyance was never implemented until well into the 20th century, when the present day harbor facilities of Lake Calumet were created.

Lake Calumet was an extremely shallow body of water when Pullman was founded.⁶⁰ Dredging commenced almost immediately as much of Pullman was elevated several feet using fill taken from the bottom of the lake. Later, this dredging supplied the clay for the brickyards.⁵¹ The channel for shipping, as conceived by the company, would cut across the lake to the short channel at its south end, which connected with the Calumet River, and would provide a means of allowing deep-draft ships to reach Pullman.

In August 1881, slips were under construction at the foot of 111th Street, in preparation for ships.⁵² By November, assessments on turning the Calumet River into a ship canal had been made, though, as the Chicago Times reported, "... many property owners object to the improvement on the grounds that the only people who will be benefitted by it will be the Pullman Company."⁶⁴ In January 1882, Major S. J. Lydecker of the U.S. Army reported to the U.S. Senate

concerning the widening and deepening of the Calumet River. Stressing that "...the operation of the government should be confined to the river in a way to benefit all interests, and not only a single enterprise." Lydecker recommended owners of property served by the canal build their own ship and dock facilities, and estimated the cost of the improvement to the government would be \$125,000.⁵⁵

On June 1, 1882, the Chicago Evening Journal reported U.S. Congressman Aldrich had stated "...the prospect is that the South Chicago Harbor will get only \$20,000 for improvements this year and the river above the harbor nothing at all."⁵⁶ In July 1882, it was reported the Senate had approved \$35,000 for Calumet harbor improvements and plans were being made to ask the next Congress to appropriate \$100,000 for further work.⁵⁷ Though reports in November 1882 indicate work was begun on improving the short connection between Lake Calumet and the Calumet River, no further evidence was uncovered in reference to additional Federal money being appropriated for improvements.⁵⁸ From available evidence, it appears the Pullman Company desired Federal financing to fund the improvement schemes designed to make Pullman a town with active harbor facilities. Such financing was never obtained.

Water Supply and the Water Tower

Pullman's remote location and large size required a water supply system capable of serving the industrial and domestic needs of the community. As a symbol of water's importance, the water tower was perhaps the most impressive structure in Pullman. An immense building over 200 feet tall, it contained a 500,000 gallon water tank, seven floors of manufacturing and storage space, pumping engines, and

a subterranean sewage vault. Even with this large water storage capacity, the water needs of Pullman were of such magnitude that the reserve held by the tank could not supply the town for more than a day. Consequently, water was stored in the tank primarily as a reserve to be utilized in case of fire.⁶⁹

During the initial construction of Pullman, water was supplied from shallow surface wells drilled in the Calumet region prior to 1880.⁷⁰ As early as July 1881, notice was given that Pullman intended water to be brought to the town from Lake Michigan.⁷¹ During August of the same year Pullman negotiated with the Village Trustees of Hyde Park to arrange a mutually agreeable means of supplying the town with water. In response to a reporter's question, George Pullman replied, "Well, we have not yet settled that point [Pullman's water supply] to a certainty, I think, however, that we shall go in with the town of Hyde Park, and obtain our supply of water from its new works--that is, provided we can agree upon the terms. . . [If we cannot come to terms] then we should simply go down to the lake shore, about four miles from the town and erect water works of our own."⁷² The terms were that ". . .if the company will advance the money to defray the expenses of laying water mains between the points named [from Cottage Grove and 67th Street to 11th Street] the village will guarantee payment within six year."⁷³ This advance was originally reported to be \$90,000.⁷⁴ On August 21, 1881 the Chicago Times announced that the Village of Hyde Park had agreed to sell water to the "Pullman people" at a monthly rate of \$50 per million gallons of water for the first 2 million gallons and \$45 per million gallons for additional water. The article also reported that "water pipes are being laid from Pullman to the Hyde Park waterworks, as rapidly as possible, six hundred feet being already completed."⁷⁵

In September there were rumors that typhoid fever had broken out in Pullman but the company quickly denied this saying, "There have been a few cases of malarial fever common to the season. . . "76 Soon afterwards a reporter from The Chicago Tribune visited the town and discovered". . .there had been quite a number of cases (malarial fever) in that part of town adjacent to Lake Calumet." and that "The people. . .had indiscreetly used the water of the so-called lake. . . for drinking purposes."77 The company quickly responded to these disclosures with the statement:

. . .the fact ought not to be overlooked that hither to a large part of the unskilled labor force at Pullman has consisted of a floating class who did not reside here, and if sickness occurred among them it is more than likely that it was contracted elsewhere.78

The Company announced the drilling of new water wells, between 85 and 100 feet deep which were to supply the town with pure water prior to the completion of the water main from Hyde Park.79

Following the undesirable publicity created by the outbreak of malarial fever, the company stressed that water would soon be flowing through the connection with Hyde Park. In September 1881, the company stated its hopes that the connection would". . . not be later than November 1."80 In truth, the connection would not be made until September 1882. In November 1881, the Western Manufacturer stated:

The present supply of water for ordinary purposes is obtained from Lake Calumet, by being pumped directly into the mains, by which it is carried to the houses. Water for drinking purposes is obtained from wells which are bored down to bedrock, to a depth of about 30 feet.

There are about 15 of these wells scattered throughout the town, which furnish an excellent quality of pure water, uncontaminated with surface drainage and percolation.

This article also indicated that water from Lake Michigan would not be available until completion of the Hyde Park Water Works.⁸¹

Work on the water mains continued through the fall and early winter of 1881. By the end of December it was reported that close to five miles of water mains were in place.⁸² The distance between Pullman and the center of Hyde Park was only about 6 miles, indicating that by the end of the year the water main was nearing completion. Apparently little progress was made during the first half of 1882 because in June three-fourths of a mile of mains still had to be laid.⁸³ By the end of the month the 16 inch (diameter) water main connecting Pullman with the Hyde Park works was finished and the company reported that ". . . in a few days (Pullman) will be drawing its supply of water directly from Lake Michigan."⁸⁴ However, this was not to be the case.

In July 1882 the company claimed the only circumstance preventing operation of the Hyde Park water connection was the incomplete status of the water tower.⁸⁵ At that time, work on the water tower had been underway for over 15 months. In April 1881, the Chicago Times reported "The work on the water tower is progressing as rapidly as the weather will permit. The foundations are nearly completed."⁸⁶ Further description of the tower appeared in June when it was noted that the 500,000 gallon water tank would rest on supports containing 350 tons of wrought iron.⁸⁷ During the winter of 1881-82 work continued but it appears the cold weather slowed construction. By spring, however, the tower had reached a height of 225 feet and was rapidly approaching completion.⁸⁹

Construction came to an end in August 1882 when the Chicago Times reported, "The great tank in the water-tower at Pullman is completed and now contains 25 feet of water. The tank is 130 feet above ground level." It must be presumed that the water in the tank came from either Lake Calumet or the deep wells in the Pullman vicinity.⁹⁰

Before Pullman could receive water from the Hyde Park waterworks, the Hyde Park facilities had to be made operable. This occurred on August 1, 1882.⁹¹ At this time the mains to Pullman were essentially complete and ready to carry water, however, the Pullman company and Hyde Park had not agreed on who should pay for the water meters needed to regulate the flow. In the last week of August the Chicago Times reported that the Pullman Company agreed to pay \$1,400 for the meters with the stipulation that they would receive a refund of that amount in the next tax-levy.⁹² The town of Pullman finally received water from Lake Michigan in mid-September 1882. The physical plant required to bring Lake Michigan water to town cost an estimated \$120,000, almost all of which was advanced by the Pullman Company.⁹³ No precise figures are available regarding the amount of water consumed by the town, but it was considerably less than the two million gallon per day estimated by the company in December 1881. The daily consumption of water for the entire town of Hyde Park between August 11, 1882 and April 11, 1883 averaged slightly more than 1,800,000 gallons.⁹⁴

Following the connection of Pullman with the Hyde Park water works little more about the system appeared in print. Though problems could have been shielded from the press it appears unlikely that any major calamities or alterations would have gone unreported.

Footnotes

Auxiliary Industries and the Development of the
Water Supply System

1. See Chapter 4 "Operations of the Plant," for a complete description of the Allen Paper Car Wheel Co.'s history and product.

2. Director's Special Meeting, 2 May 1881, Record Book A, pp. 373-374.

In his Chicago School of Architecture (page 19), Carl Condit states the Union Iron Works were established in 1852 by Bouton and Hurlburt.

3. Chicago Tribune, 14 June 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 10.

4. Record Book A, pp. 373-374.

5. Chicago Tribune, 13 April 1884, "Scrapbook Town of Pullman," (1883-1887), p. 73.

5. Chicago InterOcean, 30 October 1883, from "Scrapbooks, Town of Pullman" (1883-1887), p. 51.

7. Chicago Tribune, 13 April 1884.

8. Chicago Tribune, 24 July 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 24-26; and "Duane Doty, Notebook," p. 37, Historic Pullman Foundation Archives. In Mrs. Duane Doty's Town of Pullman (p. 83), reference is made specifically to the Granger process of gas production, which is described as an improvement upon the Lowe process. However, she states the works originally employed the Lowe process installed under the auspices of the Granger Company. The Western Manufacturer of November 1881 (p. 216) lists A. O. Granger and Co. of Philadelphia as the contractors involved in supplying the machinery for the Gas Works.
9. Chicago Evening Journal, 27 September 1882 from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 63.
10. "Duane Doty, Notebook", p. 37.
11. Chicago Journal of Commerce, 10 August 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 31; and Western Manufacturer, November 1881, p. 216, and InterOcean, 30 December 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 114.
12. Chicago Journal of Commerce, 10 August 1881.
13. Chicago Tribune, 21 September 1888.
14. Chicago Evening Journal, 7 June 1882, "Scrapbooks Misc.," Ser. A, Vol. 7, p. 5.

15. Chicago Daily News, 4 October 1886, from "Scrapbooks, Town of Pullman" (1883-1887), p. 161.
16. "Arcadian City of Pullman," p. 86. A map of Pullman dated 1 Jan. 1884 in the Burnham Library (Microfilm Roll #38, Drawing #29) also shows "Swifts Ice House" at the South-western corner of Lake Calumet.
17. Ibid., p. 86. The Report of the Committee for the Bureau of Labor Statistics also refers to "...an extensive carpenters shop..." on pages 8-9.
18. Chicago Sunday Herald, 12 February 1882, "Scrapbooks Misc.," Ser. A, Vol. 7, p. 12.
19. Burnham Library M.R. 38, drawing 30.
20. Chicago Times, 28 June 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 12.

This article lists tax assessments as follows:

Pullman Palace Ice Co.	\$40,000
Allen Paper Car-Wheel Co.	5,000
Union Foundry Works	10,000
Chicago Dredging and Dock Co.	4,000
Chicago Drop Forge Works	1,500
Dyer and Clark	1,000

21. Industrial World, 20 January 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 125.

22. Railway Age, 10 March 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 152; and Chicago Times, 2 October 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 72; and Industrial World, 3 November 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 87. The Chicago Times also stated "There was no doubt a design in placing a half-mile or more between this [locomotive works and residential facilities] settlement and that of the car shops. The workmen will naturally be of a somewhat different order. The new works will have a capacity to employ in the neighborhood of 500 men and somewhere between \$300,000 and \$400,000 will be put into the enterprise.... With these works added, the Pullman Company will be prepared to supply fully-equipped trains consisting of locomotive, tender, baggage, passenger, sleeping and dining cars." The Industrial World, 3 November 1881, listed the men involved in "...applying for the certificate..." including "...Mr. D. K. Tripp, general solicitor for the Grand Trunk Road..."

23. Chicago Sunday Times, 27 November 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6 p. 95. On the 1905 Map of the Pullman Land Association's holdings the site of the works described in the 2 October 1881 Chicago Times is occupied by the Burnside Shops of the Illinois Central Railroad, page 311. In "The Pullman Sewerage," Benezette Williams states "...the Illinois Central Railroad shops...are to be built on adjoining lands."

24. Chicago Tribune, 16 July 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 19.
25. Railway Age, 3 August 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 23.
25. Chicago Times, 1 September 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 43. The article also referred to Dr. W. J. Chisholm "...president of the New York and Chicago Companies..." as the supervisor of the company's proposed Pullman. Reference to the company's proposed Pullman works also appeared in Industrial World 7 September 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 49.
27. Chicago Times, 16 July 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 19: and Chicago Times, 21 February 1882, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 167. Note the location given for the new town was similar to the proposed locomotive works. In regards to the summer resort hotel, Mr. Beman was reported as drawing up plans for it.
28. InterOcean, 11 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 137; and InterOcean, 13 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 141.
29. Williams, "The Pullman Sewerage," p. 311.

30. John McLean, One Hundred Years in Illinois, (Chicago: Peterson Linotyping Company, 1919), p. 229. McLean states, "One of the factors in the location of Pullman was the fact that the clay on the shore of Lake Calumet was admirably adapted to the making of a fine grade of brick." No evidence of such planning was ever found.

31. Industrial Chicago, 6 Vols., Vol. 1, The Building Interests, (Chicago, the Goodspeed Publishing Company, 1891), p. 372.

The Western Manufacturer, Nov. 1881 (page 215) lists three establishments in the Chicago area as supplying pressed and common brick for Pullman. The Chicago Tribune of 22 April 1882 stated, "Thirty million bricks have already been laid in Pullman, 7,000,000 of which were made on the spot."

32. Chicago Tribune, 20 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 139; a similar article appeared in Chicago Times, 20 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 143.

33. Union Stock Yards and South Chicago Weekly Sun, 2 July 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 20; the Chicago Times 16 November 1881 stated all dredging was being done by the Chicago Dredging and Dock Co. This is confirmed by the Western Manufacturer, November 1881.

34. Chicago Tribune, 20 May 1882, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 183; In Pullman News, October 1922, pp. 157-158, Chief Millwright G. C. Bushman, former assistant to Mechanical Engineer N.W. Robinson, is credited with constructing the brickyards; Chicago Times, 16 November 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 94.

35. Mrs. Duane Doty, Town of Pullman, p. 30

36. Chicago Times, 22 April 1882 from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 177; Originally reported that 560 men from Canada had been imported, this was corrected by a spokesman of the company stating 150 men was the correct number, Chicago Times, 25 April 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 177.

37. Chicago Tribune, 22 April 1882, p. 30.

38. Chicago Tribune, 20 May 1882.

39. Chicago Evening Journal, 1 June 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 2; and Chicago Tribune, 6 June 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 2.

40. Chicago Tribune, 13 August 1882, from "Scrapbooks Misc.,"

41. "D. Doty Notebook," HPF

42. On the 1905 map of Pullman Land Association Holding, in the files of the Beman Committee, Pullman Civic Organization, the brickyards are shown as belonging to the "Illinois Brick Co."

43. H. P. Eddy and Leonard Metcalf, American Sewerage Practice, Vol. 3 Disposal of Sewage, (New York: McGraw-Hill Book Company, 1935),: p. 3. In their

introductory chapter, "Development of Sewage Treatment and Disposal," the authors list the State Insane Asylum at Augusta, Maine (pre-1875), the

State Insane Asylum at Worchester, Massachusetts (1876), a farm at Lenox, Massachusetts (1879) and Pullman, Illinois (1881) as sites of the initial use of sewage farming in the United States. The chapter further states that "...owing to the large tracts of land required, and also for aesthetic reasons, this method of treatment has never been widely adopted in the United States."

44. Chicago Times, 3 February 1881, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 133. According to this article, "The sum of money involved in the contract is about \$40,000." In "Pullman" Western Manufacturer, N. A. Williams of Chicago is listed as the supplier of the Sewer pipe and drain tile used at Pullman.
45. Report Comm. Bureau: Labor Stats, p. 3. This report indicated both systems were oriented along streets running east to west, but they were situated on every other street so that the two systems were completely separated. In analyzing the present remains of this original system it appears surface water drains run along the main streets and sewage pipes run through the back alleys.
46. "The Durham System of House Drainage," Engineering News and American Contract Journal, 9, (9 September 1882) p. 315. The Engineering News and American Contract Journal of 10 June 1882 stated the system was invented by one C. W. Durham, member of the A. S. C. E., and subsequently endorsed by E. S. Chesborough, Consulting Engineer to the City of New York.

47. Chicago Times, 10 November 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, p. 117.
48. Williams, "Pullman Sewerage," p. 314.
49. Chicago Times, 10 November 1880. Because the sewers were small, the sewage has forced to flow rapidly, thus insuring that a minimum amount of sewer gas would be created.
50. Engineering News, 12 January 1893, p. 26.
51. Williams, "Pullman Sewerage," p. 315. There was also a 20-inch pipe leading to the main chimney of the car-works which provided additional ventilation.
52. Williams, "Pullman Sewerage," p. 317-318. An engraving of the sewage pumping engine used at Pullman and built by the Cope and Maxwell Manufacturing Company of Hamilton, Ohio, is provided in the 6 April 1883 issue of Engineering (London), Vol. 35 on p. 327.
53. Ibid. p. 316. The exact location of the sewage farm is shown on Drawing 29 (dated 1884) in the "Town of Pullman" microfilm. A total of 140 acres in area, the initial 60 acre tract was described in the 13 August 1881 Chicago Times as being "...bounded on the north by 130th Street, on the south by 132nd Street, on the west by Indiana Avenue, and on the east by the Chicago and Eastern Illinois railroad."

54. Ibid., A description and illustration of this screening system is provided in William's paper.
55. A complete description of the arrangements at the farm may be found by consulting William's article; the Engineering News of 12 January 1893; the Farmers Review (Chicago), July 1881 "Scrapbooks Misc.," Ser. A, Vol. 6, p. 34; Chicago Times 13 August 1881; and Chicago Times, 6 August 1882 "Scrapbooks Misc.," Ser. A. Vol. 7, p. 25.
56. Engineering News, 12 January 1893, p. 27.
57. "Arcadian City of Pullman," Agricultural Review 3 (January 1883): pp. 77-78. According to this article separate sewer system at Pullman cost over \$300,000. In a notebook entry dated 1882, October 12, Duane Doty states that the entire cost of the sewage farm was \$44,000 and that the estimated receipts (profits) for 1882 were \$5,000.
58. Doty, Town of Pullman, p. 169.
59. Williams, "The Pullman Sewerage," p. 312.
60. Benezette Williams, "The Pullman Sewerage," p. 312. Williams states, "This lake [Calumet] is shallow, ranging from 1 to 8 feet in depth. It is about 3 miles long and 1-1/2 miles wide. It drains a small area, and is connected with Lake Michigan by the Calumet River. The river, however, which drains a much larger area than the lake, does not run through the lake, but is connected there - with by a small channel, through which the water flows

from the lake to the river, or from the river to the lake, according to the varying conditions of winds and floods."

61. Union Stock Yards and South Chicago Weekly Sun, 2 July 1881, from "Scrapbooks Misc.," Ser. A., Vol. 5, p. 20.
62. Chicago Tribune, 21 August 1881 from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 37.
63. Chicago Times, 20 November 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 76.
64. Union Stock Yards, 25 November 1881, from "Scrapbooks Misc.," Ser. A, Vol 6, p. 76.
65. Chicago Tribune, 28 January 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 140; and Chicago Tribune, 29 January 1882, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 142.
66. Chicago Evening Journal, 1 June 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 2.
67. Chicago Times, 9 July 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 17.
68. Chicago Times, 12 November 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 91; and Chicago Times, 19 November 1882, from "Scrapbooks Misc.," Ser. A, Vol. 7, p. 97.

69. In the August 18, 1881 Chicago Times George Pullman is quoted as saying that water for the town would be distributed from the tank in the water tower. As Doty notes [Town of Pullman, page 199] this water tank was a reserve supply in case of fire.
70. Chicago Tribune, September 17, 1881 from "Scrapbooks Misc.," Series A, Vol. 6, p. 62.
71. Union Stock Yards and South Chicago Weekly Sun, July 2, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 20.
72. InterOcean, August 16, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 32.
73. InterOcean, August 2, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 37. The article continued ". . .the cost of the water main would ultimately be defrayed by a general assessment upon adjacent property. Mr. Pullman's advance being accepted only to save valuable time and to enable the work to be proceeded with at once."
75. Chicago Times, August 21, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 37.
76. InterOcean, September 7, 1881, and Chicago Evening Journal September 6, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 51. Dr. A. C. Rankin, doctor in residence at Pullman, verified the absence of typhoid fever in the town.

77. Chicago Tribune, September 10, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 59.
78. Chicago Tribune, September 16, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 62.
79. Chicago Tribune, September 16, 1881, and Chicago Tribune, 17 September 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 62.
80. Chicago Tribune September 10, 1881.
81. "Pullman", Western Manufacturer, p. 216.
82. Chicago Morning News December 29, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 114.
83. Chicago Times June 4, 1882, from "Scrapbooks Misc.," Series A, Vol. 7, p. 3.
84. Stockyard Sun June 24, 1882, from "Scrapbooks Misc." Series A, Vol. 7, p. 11.
85. Chicago Times July 9, 1882, "Scrapbooks Misc.," Series A, Vol. 7, p. 17.
The article stated ". . .the water tower at Pullman will be ready to receive water in about ten days. . . everything is in readiness except the water tower."

86. Chicago Times April 3, 1881, The article continued, "The design has been changed and improved by Mr. Beman. The tower is to be seventy-five by seventy-five feet and 160 feet high. The tank will be fifty-six feet across and thirty feet deep. The capacity is to be five hundred thousand gallons."
87. Railway Age June 24, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 19.
88. Chicago Tribune October 11, 1881, from "Scrapbooks Misc.," Series A, Vol. 6, p. 75.
89. Railway Reviews May 5, 1882 from "Scrapbooks Misc.," Series A, Vol. 6, p. 180; and Chicago Times March 15, 1882 from "Scrapbooks Misc.," Series A, Vol. 6, p. 170.
90. Chicago Times August 5, 1882, from "Scrapbooks Misc.," Series A, Vol. 7, p. 25. The article also states, "the water in the tank now weighs 4,000,000 pounds and the tank itself 130,000 pounds."
91. J. James R. Croes, "The History and Statistics of American Water Works DLII - Hyde Park, Illinois," Engineering News and American Contract Journal, Vol. 10 (August 18, 1883), p. 388. The article elaborates: "Waterworks were built by Hyde Park and [the town of] Lake jointly in 1875. . . . In 1882 the town of Hyde Park gave up its interest in them and erected independent works, which went into operation August 1, 1882. . . . The supply is taken from Lake Michigan. A tunnel 5-1/4 feet in diameter is in course of

construction under the lake through indurate clay, so hard as to require blasting. This tunnel is to be over a mile long. Pending its completion, water is taken from the lake by a 16 inch cast iron pipe laid on the lake bottom for 1,620 feet and a tunnel 5 ft. 2 in. in diameter, on shore for 1,000 feet to the engine house, whence it is pumped directly into the mains under 41 lbs. pressure by four horizontal direct acting compound condensing steam engines. . . . Distribution is by fifty miles of cast iron pipe. . ."

92. Chicago Times August 25, 1882, from "Scrapbooks Misc.," Series A, Vol. 7, p.

43. Ratification of the agreement whereby George Pullman would furnish the water-pipe between 68th Street and 111th Street occurred in March 1882

[Chicago Times 11 March 1882, from "Scrapbooks, Misc.," Series A. Vol. 6, p. 170].

93. Chicago Times July 9, 1882; In the Chicago Morning News December 29, 1881, it was reported that Pullman would advance \$110,000 toward the laying of the water pipes.

94. J. James R. Croes "Water Works - Hyde Park," p. 338.

The Industrial Complex During the Era of Wooden Car Construction

Joseph Husband's description of the Pullman Car Works in 1916--"the Pullman plant is an assemblage of small factories grouped about a large-scale fabricating and erecting plant"¹--is one that applied to the plant from its earliest years. According to the company, from the beginning, the Pullman Car Works functioned as an almost self-sufficient industrial plant, with little dependency on outside suppliers except for basic raw materials. An appreciation of the plant's completeness is gained in realizing that the only materials used in car construction not actually manufactured at the plant were glass, carpets, fabrics and some iron piping. Upholstery, carpets and curtains were cut and fitted at the works, and according to one observer "the iron piping could be made on the premises, but it is cheaper to buy it."²

The industrial complex at Pullman has received little attention from modern scholars, although it was often described as an enormously large and efficient manufacturing complex.³ Pullman counted among its industries the Allen Paper Car Wheel Company, the Union Foundry and Pullman Car Wheel Works, the Columbia Screw Company, the Pullman Iron and Steel Works, the Dunning Steel Horseshoe Company (later Chicago Drop Forge Co.),⁴ and the Calumet Paint Company. Still other enterprises established at Pullman, but not related to the manufacture of railroad cars, were the Pullman Brick Works, the Pullman Carpenter Works, the Illinois Terra Cotta Lumber Company, the Pullman sewage farm and a number of

commercial ice houses.⁵ Each of these industries was distinct from the Pullman Car Works proper, yet it is almost certain that George Pullman (or P.P.C.C. stockholders) held the controlling interest in virtually all of these concerns.⁶ The physical arrangement of the auxiliary industries, the car works, and the town is shown on the 1886 map of Pullman (IL-4-Sheets 2 and 3).⁷

From its inception until well into the 20th century Pullman held title as the largest railroad car works in the United State.⁸ In the years prior to the strike in 1894, the plant employed between 3,700 and 5,250 workers, most of whom were immigrants.⁹ In 1885 the annual capacity of the shops was reported to be 500 palace cars and 7,000 freight cars, a figure which grew in the following years¹⁰ The work week consisted of a ten hour day, Monday through Saturday and, in 1885, the average daily pay of employees in the car works was \$1.84.¹¹ It was company policy to pay fixed amounts for the completion of specific tasks, a system referred to as "piece wages".¹²

Car production at Pullman was divided into two categories, passenger cars and freight cars, each of which employed distinct production methods. Passenger cars--the Pullman sleeping, dining, parlor and baggage cars-- were assembled in the Front and Rear Erecting shops, with the cars entering transverse to the building length. After 1883, freight cars were built in shops of a wholly different order which were completely separated from the rest of the plant.

Passenger Car Construction

Before assembly of passenger cars could begin it was necessary to fabricate all the components used in car construction. This work was subdivided, with special buildings devoted to the manufacture of the various parts of a car.¹³

Immediately east of the first Rear Erecting Shop were the Equipment and Paint Shop, the Wood Machine Shop, the Engine House (housing the Corliss engine that supplied most of the power to the works), the Iron Machine Shop, and the Blacksmith Shop. Behind these were the Hammer Shop, lumber kilns and Dry Lumber House and various storehouses. Additional minor industries were houses on several floors of the Water Tower, and a portion of the Rear Erecting Shop housed the Marble Works. Wheels for passenger cars were made at the Allen Paper Car Wheel Works. Paint was manufactured by the Calumet Paint Company, located south of the car works at 15th Street and Fulton Avenue, and the bronze castings used in passenger cars (doorknobs, locks and the like) were produced at the Union Foundry.

Most of the shops in Pullman were supplied with gas for lighting, and all departments of the car shops were heated by steam from the engine boilers.¹⁴ Steam elevators, operated by belts from an adjacent line shaft, were provided in shops taller than two stories. The buildings within the industrial complex were connected by the tracks of the Pullman Railroad, which by 1893 comprised a total of 35 miles.¹⁵ This, in turn, connected with a branch of the Chicago, Rock Island and Pacific Railroad, providing for easy delivery of raw materials and a convenient means of shipping rolling stock. One writer commented upon the plant's layout when plans for the complex were unveiled:

[The shops] are so situated that [they] have double frontage and so grouped that each has the readiest possible access to all others. The defect usually so common in such establishments of stringing out the shops in a long line and setting them down anywhere without much reference to the mutual convenience of different sections has been entirely avoided in this case. The dry-kiln, the foundry, the blacksmith shops, and those in which the wood and metal are shaped, have a location central to the erecting shops where the cars are put together. All are connected by tracks so that the maximum of convenience is secured and the minimum of time lost. Nothing that can be shaped, lifted, carried, or handled by machinery is touched by human hand. Elevators, and innumerable contrivances, will be used for saving labor and time. The ideas embodied in the arrangement and plans of the building are Pullman ideas.¹⁶

Prior to 1910 wood comprised the major material used in car building. Lumber was brought in by rail from all parts of the country and stacked in piles at the rear of the shops. In 1893, Doty described the lumber yards in great detail:

From the top of the Water Tower at Pullman, the observer sees, at the east and northeast of the car works, sixty acres of land covered with lumber piled in the usual manner. These vast yards contain at all times nearly three-quarters of a million dollars' worth of lumber, or about 20,000,000 of feet [sic]. . . . This lumber is all bought cut to certain sizes, 50 percent of it being pine of all kinds, this wood being most abundantly used in car building here. Twelve percent of the lumber is ash, 17 percent oak, 12 percent whitewood, 3 percent being composed of bass-wood, birch, cedar, cherry, hickory, satin-wood, walnut and other costly woods for ornamental work.¹⁷

Doty reported that in 1892, about 50 million feet of lumber were received at Pullman of which 12 million feet were used in passenger cars.¹⁸

Two and a quarter million feet of veneer (surface measure) were used per year. Veneers, 1/20th to 1/8th of an inch in thickness, were cut prior to shipment, "forming long shavings which may be shipped in large rolls like paper." Over 5,000 cars were required to bring this one year's shipment of lumber to Pullman. The lumber department was in the charge of a superintendent, styled "lumber agent," whose duties included trips to all parts of the country to purchase timber supplies. Doty wrote,

On acceptance of a contract to build, say 5,000 freight cars, bills of material are at once made. . . . The lumber agent's duty is to get this lumber here at the earliest practicable moment, and he does so with the aid of his assistants, and issues it to the construction department as fast as the foremen require it. . . . These lumber yards employ from 175 to 240 men, nine-tenths of whom are Hollanders.

Requisitions were made out to the lumber department by the various departments of the car works for the necessary lumber. "Like houses," Doty wrote, "Cars are usually built upon plans and specifications made by those ordering them, which prescribe what kind, quantity and quality of lumber shall be used." The requisitions were distributed among the foremen in charge of the different kinds of lumber. Small hand or push cars were used to carry lumber to the appropriate shops. Hydrants stood at short intervals as a protection against fire. Fine "dressed" lumber was kept under shelter, and at night, the yards were patrolled by a watchman, as were the other shops.¹⁹

Some iron and steel was necessary in the manufacture of Pullman cars and most of this was made from scrap at the Pullman Iron and Steel Works. Located on the shore of Lake Calumet at the foot of 107th Street, the plant consisted of an iron building 177x194 feet, to which a frame addition 137x36 feet was added sometime prior to 1893. Almost every form of scrap iron was collected at the works, including wornout rails and car axles. The scrap was cut up by large shears into suitable lengths for piling and subsequent heating in the furnaces of the works. Two hundred and fifty men were employed, and during some seasons, the works ran day and night.²⁰

The iron and steel works consisted of two forge fires and three Swindell regenerative gas furnaces. These were two reverberatory heating furnaces, with a working bed of 11x6x7 feet, adapted to the consumption of raw fuel direct on its own grate.

Before consigning the scrap metal to the furnaces, it was placed in wooden forms "about two feet long and a foot wide" for convenience in handling. Then "forms and all" were thrown in.²¹ Waste heat from the furnaces was utilized to raise steam by passing beneath steam boilers connected with the furnaces by flues. Six steel boilers, 5x25 feet in size, operated the eight steam engines required to power the rollers; these were described as being of "various sizes, representing not less than 2,000 horsepower."

Three separate trains of rolls were employed, 8-, 10-, and 18-inches in size. Heated metal passed through the rolls until it reached the desired form. Impurities, or slay, created by the heating and rolling, were carried to the rear of the works and dumped.²² The bars and rods were left to cool on a hot-bed made of old T-rails, then cut into lengths and loaded on rail cars for shipment to the car works, where nearly the entire product of the mill was consumed. The annual capacity of the Pullman Iron and Steel Works in 1893 was "about 35,000 net tons finished merchantable bars and about 12,000 tons of scrap bars, which means rolled iron in a wrought state, to be again cut up into shorter pieces. . . , piled and re-rolled." With lumber delivered to the Wood Machine Shop and iron and steel bars to the Iron Machine and Blacksmith Shops, work on fashioning the parts of a car could begin.

The main source of power for machinery in the car works was the 1876 Centennial Corliss Engine (Photo IL-5). Upon the close of the Centennial Exposition, the Corliss engine had been dismantled and shipped back to its builder, George H. Corliss at Providence, Rhode Island. It remained there until in 1880, when it was purchased by George Pullman for his new shops. The engine weighed 700 tons

and required a train of 35 cars to carry it to Pullman. The Corliss Engine was put into operation on April 2, 1881 and continued until the fall of 1910, when it was dismantled and sold for scrap.²³

The Corliss engine was located in the Engine Room at the front of the car shops, a room 84 feet square by 68 feet high. Through the large windows of this building, passersby and passengers on the Illinois Central could see the engine at work. The Corliss stood on a platform 26 inches above the floor and the valves, condenser-drivers, pinion and other parts were below, in a basement. The engine consisted of two vertical, simple condensing engines with Corliss valve gears and steam-jacketed cylinders set on A-frames. A common flywheel was mounted between the two engines and both were controlled by one governor. Each had its own throttle valve, walking beam, jet condenser, framework and foundation. The geared flywheel meshed into a pinion wheel beneath the floor and this pinion wheel, which measured 9.9 feet in diameter and weighed 17,000 pounds, was in turn mounted on a pinion shaft with a diameter of 14 inches. The diameter of the line-shafting varied from 8 to 5 inches and it ran in tunnels approximately 4 to 5 feet below ground.²⁴ According to Doty, by March 1893, there were 3,000 linear feet of main line shafting and 13,000 feet of overhead shafting; 3,000 pulleys; 3,000 pillow blocks and hangers; and 89,399 feet of belting of all kinds for running some 900 machines contained in the car works.²⁵ Though rated at 2,400 h.p., the engine was seldom required to work beyond half that capacity.²⁶

Steam was supplied to the engine from two out of 12 steel boilers located in the Boiler Room immediately east of the Engine Room. These were horizontal and tubular in construction, 18 feet long and 6 feet in diameter. According to Doty, the fuel cost of furnishing power for the works from the Corliss engine was "3-1/2 cents for each horsepower for ten hours." Ten tons of bituminous coal were used each day. In addition, the sawdust and shavings from the Wood Machine shop were burned under the boilers, "this rubbish furnishing about one-half the fuel required for making the steam used in the engine."²⁷ The Corliss was not the only engine supplying power for the car shops. By 1893 there were 19 additional engines at work in the greatly expanded plant, which, with the Corliss --still the largest engine at Pullman--provided a total capacity of 5,980 horsepower.²⁸

Construction of the Passenger Cars

The construction of Pullman passenger cars began in the offices of the works located in the tower of the Administration Building.

When an order is received for a given number of cars, it is accompanied by carefully prepared drawings of every detail and by specifications which even enumerate the quantity and quality of screws, nails, bolt, castings, trimmings, etc., which are to be used. . . . even the paint and varnishes are specified, as well as the number of coats of each, and the length of time each coat is to be given to dry. Thus, it will be seen that a car is first carefully constructed in the mind of the designer and all details put upon paper, which serve as a guide to those having the construction in hand.²⁹

Bills for the materials required were then made in each department, and patterns for the iron and wood work were prepared. Necessary raw materials were furnished as quickly as possible. Doty writes:

. . . .the wood machine shop gets out from the rough lumber the exact number of pieces of wood of every kind and form called for, and the blacksmith shop gets out the forgings required, the bolt department makes the exact number of bolts of various kinds needed, and the brass foundry fills its order for the necessary trimmings. . . .³⁰

The bulk of material contained in a Pullman car was cut and shaped in the Wood Machine Shop. This shop, 200x200 feet in size and three stories tall, connected at the rear with the dry lumber storage house via an iron truss bridge.³¹ The kiln-dried lumber, ready for use, could thus be brought conveniently over the bridge to the wood machine shop without interfering with the operation of the transfer table.

The study discovered no detailed description of the operation of the Wood Machine Shop or its machinery though rudimentary floor plans of the building have been preserved at the Chicago Art Institute. Railroad Car Journal described it this way:

An incessant buzz of saws and rattling of belting is what greets the visitors to the wood machine shop.... The number of benches and machines can be imagined when it is taken into consideration that the leather belting used to run the machinery; if measured in one step, would reach ten miles.... One or more men feed the planing machine, others feed the ton [sic] and groove machine. Some lay out the parts, others cut them. There are mouldings enough made, it would seem, to ornament a city. Over one hundred and fifty patterns are used for various work, and on different cars.³²

In 1893, 150 men and boys worked in the carving department at Pullman³³

The metal used in the Pullman cars was machined in the Iron Machine Shop, 103x200 feet in size and three stories high, located immediately north of the Engine Room and Boiler House (IL 5-photocopy showing Iron Machine Shop from Picturesque Pullman). In 1892, this building contained 106 machines "of the latest and best patterns, comprising lathes, punches, drills, planes, turners,

wheel-bores and hydraulic machines for pressing wheels upon axles; a large number of vises are also used for fitting purposes." Doty reported that an average of 350 car wheels a day were fitted to axles, and that 400 steel-tired passenger car wheels a month were turned up smoothly to a true round to be used under cars. Brass work and castings were also finished here.³⁴

On the third floor the silver electroplating of the curtain rods and rings, brackets, pumps, cuspidors, locks, hinges, sash trimmings and doorknobs occurred. By action of electric current, particles of metallic silver passed to an object suspended in a solution of silver chloride and potassium cyanide and formed a tight bond. There was one Mather dynamo of eight volts and 900 amperes and one Brush dynamo of four volts and 250 amperes. After removal from the plating liquid, the object was burnished with steel tools. For economy, the silver on old trimmings was removed by acid and used again. A small amount of gold plating was done at Pullman, usually only for special or private cars.³⁵

The Blacksmith shop at Pullman was a one-story structure, 127x200 feet in size, with an addition 75x125 feet. A description of the Pullman shops published in 1884 reported that:

It is in these shops that the heavy work is done. The seething furnaces put out their supply of molten iron, and a gang of men stripped to their undershirts carry it about to the forge workers who transform it into the various parts for construction purposes. Iron rods are cut up into pieces and heavy hammers pound heads on them. Threads are then put on the opposite end and they are piled up in heaps, completed bolts.³⁸

At the rear of the Blacksmith Shop and north of the Water Tower was the Hammer Shop. This was a frame building sheathed with corrugated iron. The single-story building, 160 by 200 feet in size, featured a hipped roof "supported by very substantial iron truss work." Western Manufacturer in 1881 announced that "[the building] will contain, when complete, six hammers of from 500 to 1,500 pounds stroke, in addition to six large helve hammers for making car axles, etc."³⁹ The 1886 insurance map of Pullman indicates that these were "four steam hammers," but aside from a drawing in the Western Manufacturer, there is no further evidence indicating either what this building looked like or what machinery it contained prior to its destruction by fire in 1890. The new Hammer Shop, erected the following year, was "built of iron" and was 250x200 feet in size. In 1893, nearly 200 men were employed in this shop, which produced axles and heavy car forgings. There were ten steam hammers, ranging from 750 pounds to 5 tons in weight, and 12 large heating furnaces. About 200 car axles and 25 tons of heavy car forgings were manufactured daily, forged from "select wrought iron scrap, of which 75 to 100 tons a day are consumed." Work in this department sometimes continued both day and night.⁴⁰

The screws used in the manufacture of Pullman cars were made by the Columbia Screw Company, described as located in the "southwest corner of the Union Foundry building," though this company was not incorporated until sometime after 1886 and it is not known where screws were procured prior to that time. The production of screws was "entirely a machine system, excepting the cleansing,

brightening and putting up in packages." In 1893, there were 50 workers at this factory, of whom a large number were apparently women.⁴¹

Additional light manufacturing was carried on in the several stories of the Water Tower. By 1892, the second floor was occupied by the electrical department of the car shops. This department made the electrical annunciators, push buttons and batteries for lighting trains. The dynamos used for lighting the repair, freight and parts shops and the rooms of the water tower were also used here. Twenty-six workers were employed in the electrical department of the company.⁴² On the third and fourth floors of the tower, 50 workers were engaged in "glass beveling, etching, crystalizing and embossing." The fifth floor was occupied by a branch of the paint department known as "The Girl's Room". Here, women were employed in finishing small articles such as window stops and screens, wind deflectors, wood seat ends, wine racks, step ladders, pillow boxes and step boxes. The remaining stories of the Water Tower were used for storage.⁴³

The preparation of paints and the cutting, sewing and fitting of upholstery, draperies and carpets was done at the Equipment, Varnishing and Paint Shop; a three story building 100x86 feet in size, situated adjacent to the Wood Machine Shop at the north end of the first rear Erecting Shop. Railroad Car Journal reported that the upholstering department initially occupied two floors of this building and employed between 50 and 100 women and girls.⁴⁴ After 1887, at least part of the Upholster Department was located in the new Repair Shops. Jennie Curtiss, an employee at the time of the Pullman Strike, wrote a letter describing shop abuses that gives some information regarding this department's functions and operation:

There are two sewing rooms in the Pullman works; one is where all the new work is done, such as new carpets, window curtains, silk, satin, velvet, and plush draperies made for parlor, dining and chair cars only. We also sew the plush and tapestry with which the seats and backs of the sleepers are upholstered, and make all the sheets, pillow-slips, tablecloths, towels, napkins and linen of all descriptions used in the dining cars and sleepers. We also make all kinds of berth curtains. Then, there is the repairing is done. . . The work in these sewing rooms is made [i.e., paid by] mostly piece work and some day work⁴⁵

According to Doty, some 4,000 pieces of linen were turned out each day.⁴⁶

There were 5 branches of the paint department, each in the charge of an assistant foreman. These branches included exterior body, interior body, bunk and sash, ceiling (or headlining) work and one involved with painting small movable objects. Paints and materials were kept in a stock room, probably situated on the first floor of the Equipment and Paint Shop. As directed by the bills of material, men employed here prepared the necessary supplies and delivered them to the workmen as needed. Exterior body painting, including the ornamental designs, striping, lettering, and varnish sealer coats, consumed 25 to 30 days for passenger coaches, 35 to 40 days for sleeping cars. While this work was in progress, other branches of the Paint Department performed their functions. Bunks, sash, doors and blinds, once delivered from the Wood Machine Shop, received a coat of stain and three to four coats of varnish, with sanding between coats. The process of finishing the interior body work--the sides, end and partitions of cars--was much the same. Ceilings for cars were made in panels of three-ply oak or whitewood veneer, glued together, placed in forms and shaped. These panels were then painted (or finished in natural wood) and decorated with paint or gold leaf by means of stencil plates and brushes. The ceiling panels were then varnished with three coats, rubbed with pumice stone and water, and placed into the car. The employees in the Paint Department

numbered between 400 and 500; the number varied with the amount of work to be turned out. According to Doty, "the bulk of the material consumed, such as colors of all kinds," was supplied by the Calumet Paint Company.⁴⁷

In the early Pullman Cars marble was used for wash basin frames and water cooler foundations. To provide for this a Marble Works was situated in the long narrow division between the first and second Rear Erecting Shops. It is uncertain what, if any, machines were used here. The Marble Works employed 25 workers in 1893. This number represented a decline from former years because by that time, marble fixtures were being replaced with molded iron ones.⁴⁸

Although the 1886 and 1894 insurance maps label the functions of various parts of the complex, it is not known exactly where the car trucks (the wheel and frame units under each end of a railroad car) were made. Doty writes that "in the blacksmith shop and in the hammer shop, flat bars are made into the various forms required in trucks and car bodies"⁴⁹ and claims elsewhere that "forty-five different kinds of passenger car trucks have already been built in the Pullman shops"⁵⁰ It appears that the trucks were constructed at Pullman and not imported from another manufacturer. Doty mentions the "hydraulic machines for pressing wheels upon axles" in the Iron Machine Shop, but there was no convenient rail link between this shop and the Front Erecting Shop, where the erection of cars began. It is possible that the assembly of car trucks was the first order of business in the Front Erecting Shop.

Pullman used paper wheels exclusively on all its passenger cars. These were manufactured at the shops of the Allen Paper Car Wheel Company, located at the north end of the car works next to the Blacksmith Shop, and the P.P.C.C. was its biggest customer.

The first paper wheels were made at Brandon, Vermont, in 1869, by Richard N. Allen (? -1890), a railroad engineer interested in making a car wheel which would last longer than those then used. According to the Western Manufacturer, the common iron car wheel cast in mold usually varied somewhat from a true circle. This inequality increased with use, and the consequent "thumping on the rail" hastened crystallization and ruined the wheel. A composite wheel, having a paper core, iron hub and cast steel tire turned to a true circle, seemed to answer the theoretical requirements of an improved car wheel.⁵¹ Allen constructed such a wheel, and in 1871, a set was tried under a Pullman sleeper, "with such satisfactory results that 100 wheels were ordered by the Pullman Palace Car Co., under a guarantee of doing 200,000 miles service." The paper wheel was later adopted by the Pullman Company as its standard.⁵²

It was claimed that paper wheels intercepted and absorbed the vibrations caused by contact between tire and rail, while with iron wheels, vibrations were transmitted to the axle, causing more rapid wearing of the journal and eventual disintegration of the axle. It was advertised that the advantages of paper wheels were a smoother and quieter ride, reduced cost of wheels and axles, since both lasted longer, and greater reliability due to less frequent breakdowns enroute.⁵³ During the late 1870's and early 1880's a controversy in railroad trade magazines raged over the economy of paper wheels since they cost almost 10

times as much as ordinary cast iron wheels. There were strong advocates on both sides of the issue.⁵⁴ The paper wheel remained a feature of Pullman cars into the early twentieth century when they were phased out because of their inability to carry the increased weight of steel cars.⁵⁵

In 1880, the Allen Paper Car Wheel works were established at Hudson, New York, and at Pullman. The works at Pullman were a visual counterpart, albeit on a smaller scale, of the Administration Building. The building has a frontage of 364 feet, and was divided into two parallel parts of equal length, each 150 feet wide and connected at the center to form an "H". The building featured a two-story central "tower" with offices on the second floor and a machine shop which extended the entire width of the front at ground level. This shop contained (in 1893) ten 54-inch lathes for boring and turning tires, hydraulic and drill presses, plat lathes and boring drills for putting the wheels together. The rear half of the building contained a foundry, where the iron wheel hubs and centers were cast, a boiler house, blacksmith shop, paste shop and storerooms for stock. A dry room for the pasted paper cores was located on the second floor of the central tower at the rear.⁵⁶

The strawboard used in the manufacture of car wheels was made at paper mills owned by the company at Morris, Illinois.⁵⁷ The circular sheets of paper were pasted with ordinary flour paste by boys. The pasted sheets were then piled in lots of 13. A number of these disks, separated by dry sheets of paper, were then subjected to hydraulic pressure for a period of two hours. The resulting paper slabs, each about 14 inches in thickness, were placed in the drying room for a week, where the temperature was kept at about 120 degrees. Four of the

thicker slabs were then pasted together, pressed to form a paper core four inches thick, and thoroughly seasoned (dried) for up to two months. The paper blocks was put upon a lathe and turned to fit the tire. Hydraulic pressure was applied to force the paper block into a steel tire.⁵⁸ Cast-iron hubs and plates were applied next and the whole assembly drilled and bolted together. The tire of the finished wheel was turned upon a lathe to ensure an exact round, and the process was complete. The Allen Shops at Pullman were making an average of 30 wheels a day by 1882, according to a notebook kept by Duane Doty. There were then 41 employees at the works, under the direction of superintendent John L. Woods.⁵⁹

Assembling passenger cars began in the Front Erecting Shops. The prepared materials were delivered as needed to the compartments where the cars were to be erected. "The trucks are placed on the track and the floor structure is begun," according to Railroad Car Journal.⁶⁰ Doty writes: "First the bottom materials --such as sills, floor-joists, flooring, draft-timber and transoms-- arrive and are taken in hand by the bottom-builder."⁶¹ Cars were conveyed from one stall to another during the course of their construction:

No car is completed in the building in which its construction begins, but is removed from stall to stall, where each set of workmen perform their respective share of labor, until--beginning at the first stall a mere rough framework of sills and joists, resting like a huge skeleton upon its trucks--it leaves the paint and varnishing shops, a luxurious, gilded, palace car. . . .⁶²

Spanning the length of the Front Erecting Shops at the rear was a transfer table, the system by which passenger cars were moved from one shop, or stall, to another during construction. A steam-powered "dummy" engine occupied the middle

of three tracks and operated the six pairs of wheels of the table. Prior to the introduction of this engine, whose invention is credited to an employee by the name of N.W. Robinson, cars were run out of the stalls and onto the transfer table by hand, requiring 30 to 40 men to do the job.⁶³ Beyond the open court occupied by the transfer table was a Rear Erecting Shop, 400x86 feet, and beyond this another pair of erecting shops separated by another transfer table.

Two of the original three Rear Erecting Shops can still be seen although in greatly altered condition, since the later Steel Passenger Shops were added onto them in 1908, filling in the spaces left by the then obsolete transfer table. The transfer table was an important, though by no means novel, feature of the Pullman Car Works. A Canadian journalist who visited the shops in 1882 gave this description:

The two long lines of shops run parallel, [and] down the Centre is a railroad track on which a small, but powerful dummy engine [sits;] to the right and left of this, about fourteen feet distant, on each side is a single rail. With four wheels, two on the main track and two on each of the outer tracks [,] rests a long platform truck with platform on it. Tracks also run into each of the shops. . . . and the main railroad track runs across the upper end of the yard. To shift material from any one shop to another, the engine pulls off to the required point a car load of lumber, iron works, springs, trucks for a new car, anything that is required is pulled right into this moving track and is placed at the point or shop where it is required. As the loaded cars, by the hoist of the engine, are pulled on and off the platform, the men who work it have light labor to perform. In building a car, as the work progresses it is passed from one shop to another by means of this floating track until it is ready for the road.

At the completion of the bottom of the car, it was turned over to the body builder, who applied "posts, bracing, filling, belt railing, paneling, car-lining, etc." The car was next taken by the "roofers," who applied roofboards and moldings, then by the "thinners," who put on the tin roof covers. The car

was then taken by the outside painters and was entered at the same time by the inside finishers, who installed and finished the woodwork. Pipes for heating and lighting were installed before the seats were put in place.

The inside painters entered the car next and finished the interior woodwork. The car was then ready for the "trimmers," who installed the bronze or plated trimmings on doors, sash, blinds and walls. The upholstery, draperies, seat coverings--all prepared before hand--were put in, and the car was then ready for the finishing touches added by the Equipment Department and delivery to its purchasers.

Doty adds:

Parties for whom cars are built generally keep an inspector at the shops to see that all work and materials are in accordance with plans and specifications. All work in the construction department is carefully sub-divided many different gangs of men having their allotted tasks. . .⁶⁵

It is not known precisely how many stalls a car passed through during the course of construction. However, it is implausible that the 24 stalls of the Front Erecting Shops represented the "twenty-four stages of progress in car-building," as one observer wrote.⁶⁶ Railroad Car Journal acknowledged the presence of the transfer table between the pairs of erecting shops ("On the table, a track is laid, which enable a car to be run out of one shop and transferred to any of the other shops."), yet did not describe its actual role in production. Instead, the car building process was described as akin to the housebuilder's art:

The work is so systematized that as soon as one gang finishes its work, another comes along. In that way, the tinsmiths, steam-pipe fitters, carpenters and painters all work speedily without being in each other's way. When a car has been completed, it is drawn out, and the trucks for a new one are placed on the erection tracks⁵⁷

According to Doty's description of the process, the car was "turned over" by the bottom-builders to the body-builders, next "taken" by the roofers, next "taken" by the outside painters and inside finishers simultaneously, with finishing touches added by the trimmers.⁵⁸ Thus, the progressive construction of passenger cars may have involved four to five movements, but this cannot be documented.⁵⁹ Following completion, cars were stored outside until moved for operation.

The Freight Car Shops

The Pullman Car Works were originally designed to build not only the company's famous "palace cars," but also to produce other kinds of rolling stock, including freight cars. Freight car production was initially intended to occupy the rear erecting shops.⁷⁰ However, demand for "palace cars" was so great that freight production was quickly relegated to "a few stalls" in the middle shop of the three rear erecting shops.

On August 11, 1881, Railway Age reported that: "The new [Pullman] works, immense as they are, already overcrowded, and part of the stalls intended for the erection of freight cars are filled with passenger cars."⁷¹ New quarters for freight car production were built at 108th Street on the north side of the car works in 1883. The plan for these shops differed markedly from those for the erection of passenger cars.

The Freight Car Shops were situated in a single-story building, 1,350 feet long and 200 feet at its widest point. The shops included a wood mill truck shop, door room, store house, erecting shop, paint shop and matching rooms, where the flooring, roofing and ceilings for cars were made. In 1893, Doty reported that there were 79 wood-working machines in the mill and matching rooms. The power for operating them was furnished by a 900-h.p. engine, but shafting connected with the Corliss engine "in case of accident to the local engine."⁷²

The Freight Car Shops were "laid out with tracks from one end to the other."⁷³ The 1886 Map of Pullman shows three parallel tracks at the shop entrance and eight tracks at its north end, presumably for the stockpiling of completed cars awaiting delivery. Doty describes the shop's operation:

Lumber enters the south end of these shops from the lumber yards and is cut to proper lengths, planed, mortised, bored and fashioned for use. In every onward step of its progress, and it never moves backward, it receives additional shaping and treatment till it reaches the erecting rooms, where the car builders take it and build it into cars upon the trucks which have already been set in place.... The erecting shop is 450 feet long and contains parallel tracks which furnish standing room for eighty cars, so that while forty are building today on part of the tracks, laborers are distributing lumber and iron for forty more along the vacant tracks, this material to be built into cars on the following day.... The thousands of pieces of wood and iron in a car of a given lot are, like the pieces of a sewing machine or a revolver, so like the similar pieces of every car of the lot that they are interchangeable. When work begins on a lot of a thousand cars, it proceeds with almost the accuracy and regularity of the motions of the planets in their orbits.⁷⁴

The very rudimentary descriptions of the Freight Car Shops that exist show that the cars were erected in trains, each car in a stationary position, the gangs of builders moving to each car to perform their specialized functions. Railroad Car Journal described the operation this way:

The new lumber is taken in at one end of the shop. It is first planed and laid out. Then it is cut up into sills, braces, uprights, roofs and doors. The boards that go to make floors and bodies are cut out about as biscuits are stamped in a bake shop. First, the wheels and axles are rolled in. The trucks are built on them, and the floor frame on the trucks. Then the flooring is laid and the body frame is put together... The cars in course of construction look like a long train, and the method of joining the parts is very rapid. For instance, when the flooring is laid, the nails that hold it are driven but partly in. So it goes until a string of cars are seen with the nails projecting. A second nailer comes along with a sledge, and with one well-directed blow drives each nail home. Two men (one on each side of the car floor) can walk along together and secure the floors of a train of cars in a very short time. The system has been so perfectly maintained that a dozen or more men keep at work on one car, each performing a different service, and no man in another's way. The truck men, sill makers, framers, floors, body makers, roofers, thinners, painters, letterers and oilers are thus enabled to keep this ceaseless enterprise working so harmoniously that the raw material brought in at one end of the rolls out of the other, after a "run" of 1,200 feet, a full-fledged car ready for delivery.⁷⁵

The Freight Shops employed 500 men, of whom 130 worked in the wood mill, 270 in the erecting shop, and 100 in the paint shop. By 1893, the Freight Shops, "just enlarged," provided drying room for 120 cars.⁷⁶ The usual rate of production was 40 finished freight cars a day, although on August 13, 1885, a record 100 flat cars were built in 9 hours and 50 minutes.⁷⁷ During the three years ending September 1, 1892, the Freight Car Shops at Pullman built 5,283 box cars, 14,477 coal cars, 195 flat cars, 13 barrel cars, 45 poultry cars, 13 caboose cars, 563 refrigerator cars, 300 fruit cars and 25 ore cars for a total of 21,134 cars. Doty estimated that during this period the Pullman shops "probably made six out of every 100 freight cars built in this country."⁷⁸

The Union Foundry and Pullman Car Wheel Works

The iron work for freight cars was made at the forges of the passenger car shops and at the Union Foundry and Pullman Car Wheel Works, which also cast all of the wheels for freight cars.⁷⁹ The foundry was located approximately 1,500 feet north of the Freight Shops on 104th Street at Lake Calumet. Railroad Car Journal described this enterprise in 1892 as a "monster concern," with a capacity for employing 1,200 workmen and using 250 tons of melted iron a day.⁸⁰ In 1893, Doty claimed that there were only 600 foundry workers, "a majority of them native born," 70 percent of whom lived in Pullman. Much of the Union Foundry complex still existed in 1977, although alterations have occurred since it closed foundry operations in the early 20th century. The businesses that occupy the works today --a warehouse, a mattress factory, and a manufacturer of artificial Christmas trees and trimmings--make it difficult to visualize the "air seemingly full of ladies of molten iron, . . . [and the] streams of liquid fire pouring from the cupolas" that Doty describes.⁸¹ The Union Foundry was established in 1852 by N.S. Bouton, with works located at 15th and Dearborn Streets in Chicago. The "Union Foundry and Pullman Car Wheel Works" was incorporated in 1881 with a capital stock of \$300,000, and in 1882, the foundry's works were removed to the new and enlarged site of Pullman. Incorporators of the works included George M. Pullman and Chicago businessman John Crerar, among others. A trade catalog published in 1885 announced the enterprise as "Manufacturers and Dealers in all kinds of Cast and Wrought Iron, the largest foundry in the world in which architectural iron work is done."⁸²

By June 1882, only months after operations began, "about 550 men" were reportedly at work Union Foundry; four months later, the Chicago Tribune announced that "nearly 1,000 men are now employed in the [foundry] works."⁸³

In 1893 Doty stated there were 500 foundry workers.⁸⁴ The foundry work force probably fluctuated in response to the number of car orders. Although Western Manufacturer reported that architectural castings were one of "the great specialities" of these works,⁸⁵ it appears the majority of the foundry's business producing freight car wheels and other heavy iron work was with the Pullman Car Works. In addition, the foundry cast all of the bronze and brass trim used in passenger cars.

The foundry complex consisted of two large main buildings. The largest contained the foundry proper (encompassing three distinct foundry operations), and the other housed the finishing machine, blacksmith and pattern shops. Small outbuildings housed an office, paint shop, carpenter shop, cleaning house, coke and sand sheds. Working conditions at the plant can be imagined from the following account:

The foundry is a long, gloomy-appearing structures; made so perhaps, by the volume of smoke that seems constantly to ascend from the molds. Nearly the entire foundry is filled with molding clay, and the men, bending here and there, making up their forms and relieving others of finished wheels looks like a swarm of bees. The process, though extremely pleasant to witness, is not quite as pleasant to linger around, because the gas emitted from the iron is almost stifling. The men get accustomed to it, they say, and don't suffer from the suffocating sensation as a person would who was not used to the fumes.⁸⁶

The wheel foundry was situated at the south end of the foundry building. There were two cupolas there, continually fed with pig iron, pieces of old wheels, coke and limestone. Near the bottom of the cupola, molten iron ran into a large receiving ladle, or iron pot, from which smaller ladles were filled in rapid

succession, each holding iron sufficient for a single wheel (500 to 700 lbs.). Men wheeled these ladles by truck to a separate row called "floors." The ladle of fluid iron was lifted by an overhead taveling crane and poured into a sand mold. The crane later returned to lift the red-hot wheel from its mold and carry it to one of the 20 cooling pits, or wells, within the foundry. The wheels were placed in the pits, covered with earth, and allowed to cool slowly "for some days." The pits were then re-opened, the cooled wheels taken out, cleaned, inspected and prepared for shipment. The wheel foundry operated day and night, "because it would be fatal to allow the fires to become dead." By 1893, Union Foundry was producing about 400 car wheels daily; this casting alone consumed 125 tons of iron, or 50% of the total daily consumption.⁸⁷

Adjacent to the wheel foundry was the car casting or brass foundry. The bronze work for Pullman cars was made here: hinges, hat hooks, frames, basket racks and other ornamental and practical trimmings. This foundry contained 20 furnaces for crucibles, in which from 50 to 300 pounds of bronze were melted several times each day. Pigs of copper, zinc and lead were on hand, from which mixtures of the various kinds, colors and qualities of trimmings were made.

Next to this was the general or "soft" foundry. Doty does not specify the kinds of castings made here, though it was probably devoted to heavy iron castings for Pullman cars and architectural work commissioned by outside customers.⁸⁸

Activities here were much the same as those at the wheel foundry, with the molten iron transferred in ladles by trucks to the various portions of the building, poured into sand molds, and then allowed to cool. Doty notes that in this department, the men made their molds in the morning, "poured off" in the

afternoon, and left the castings in their flasks for removal by the night gang. The night men removed the castings, banked up the sand and piled the flasks for the next day's use. The castings were then taken to the cleaning house where, with stiff wire brushes and by tumbling in revolving barrels, the burnt sand and cores were removed. All the rough parts were cut away with chisels and emery wheels and then the castings--bright grey, clean and smooth--were ready for shipment.

The other foundry departments were located across the railroad track in an adjacent building. In the finishing department, the rough car castings passed through lathes, emery wheels, leather, hide and cotton cloth wheels, to a smooth and lustrous finish. The borers, planers and drill pressers in the machine shop were used to finish and put together the "hundreds" of trimmings for Pullman cars cast at the foundry. The finished castings were then either shipped to the erecting shops for immediate use, or, if necessary, prepared for transfer to the Electro Plating department on the third floor of the Iron Machine Shop. Elsewhere in this building, artists could be seen modeling new design in wax and plaster. Pattern-makers were at work in the machine shop, and an attached, three-story brick pattern shop stored the patterns not currently in use.³⁹

Power for the shops was provided by a 150 h.p. engine fed by four boiler, according to the 1886 insurance map of Pullman. The impressive 110' foot chimney with a hexagonal base 12 feet in diameter can still be seen. The foundry office, now demolished, occupied a small two-story building on 104th Street.

The Industrial Complex During the Era of Wooden Car Construction

1. "What a New System of Management Did For Us, "System 29 1916, p 116.
2. "The Pullman Palace Car Work at Pullman, Ill., "Railroad Car Journal April 30, 1892; p 131.
3. Although many accounts, especially those appearing in the Pullman Co. scrapbooks, should be read with a bit of skepticism, there is no question but that Pullman was a remarkable facility.
4. The Dunning Steel Horseshoe Company, also known as the Chicao Steel Horseshoe Company by 1886, had become the Chicago Drop Forge and Foundry. This company probably related to the car works in only a peripheral fashion. According to the Chicago Tribune (September 21, 1888), this company's products included steel shears, scissors, carriage hardware and sewing machine castings.
5. George Pullman hoped to attract many more industries to the Calumet region, which one writer predicted would in a few years become "the busiest and most enterprising of all American manufacturing centers" (Chicago Tribune, January 9, 1881, from "Scrapbooks Misc., "Ser. A, Vol. 5, p. 124). The future did bring this industrial development, though not in George Pullman's lifetime. This was due at least partially to the Pullman Land Association's strict control of their land in the Calumet region. A later court order to sell the property opened the way for new development.

6. Concerning the Calumet Paint Company, one journalist wrote: "[These works] are also said to be independent of the Pullman Company, but this can be hardly the case, as the stockholder are also stockholders of the Pullman Company" Chicago Tribune, (September 21, 1888).
7. In large part these drawings are based on Rascher's fire insurance maps of Pullman, which are preserved as part of the Pullman Collection, Newberry Library, Chicago, Illinois.
8. "Pullman Incorporated," Fortune, Jan.-Feb. 1938.
9. Chicago InterOcean, October 16, 1885 from "Scrapbooks Misc.," Ser. B, Vol. 1, p. 36 and Railway Gazette, October 30, 1885, from "Scrapbooks, Town of Pullman, 1883-1887," p. 128.
10. Chicago Journal of Commerce, April 7, 1886, from "Scrapbooks Misc.," Ser. B., Vol. 1, p. 43.
11. Chicago InterOcean, October 16, 1885.
12. Doty, Town of Pullman, p. 27. In an unidentified news clipping, October 1888, "Scrapbooks Misc. "Ser. B., Vol. 2, p. 1, a system of "practical industrial training" was reported to have produced "excellent results" by 1888. George Pullman explained one method of training new workers: "When a son of any of the operatives expressed a desire to learn a trade, he is taken into the works and given an opportunity to do so. As soon as his

services are any value to the company, his name is placed on the rolls and he is paid by the piece, so that he has every inducement to improve. There are now 35 boys in the carving department. . ."

The Chicago Journal of Commerce, October 19, 1887 ("Scrapbooks Misc." Ser. A, Vol. 10, p 141), described the Pullman works as a "complete industrial and art school from which other industries may pattern. The material is all received in the raw state... and designed, shaped, carved, and ornamented all by Pullman artists, educated and trained in its own school."

13. Chicago Evening Journal, December 6, 1881, from "Scrapbooks Misc.," Ser. A, Vol. 6, p. 100.

14. Doty, Town of Pullman, pp. 86, 152-163.

15. Ibid., p. 159.

16. Chicago Tribune, April 25, 1880, from "Scrapbooks Misc.," Ser. A, Vol. 5, pp. 85-87.

17. Unless otherwise noted, information on the lumber yards at Pullman is taken from Duane Doty, "Lumber and Lumber Yards," Railroad Car Journal, May 1893, from "Scrapbooks Misc.," Ser. B, Vol. 3, p. 152.

18. These had been increased from 9 in 1885, when Railway News (November 5, 1885) reported: "There are nine lumber drying kilns at the Pullman Car Works, each having a capacity of 30,000 feet. Green Wood will dry in them in five days. . . ." From "Scrapbooks Misc.," Ser. A, Vol. 9, unpagged.

19. Lumber sheds are indicated on the 1886 Rascher's insurance map. With respect to a fire at the Pullman lumber yards in 1893, George Pullman is quoted as saying: "The damage I think will not be great as we keep our fine lumber under shelter and only the common sort outside." Chicago Tribune, September 12, 1893, from "Scrapbooks Misc.," Ser. B, Vol. 3, p. 179.

20. This and subsequent information on the Pullman Iron and Steel Works is taken from Doty, Town of Pullman, pp. 156-158.

21. "Pullman Palace Car Works," Railroad Car Journal, p. 133.

22. Ibid. Railroad Car Journal thought this "not only an excellent means of disposing of it, [but it] is gradually filling in the low land leading off to Lake Calumet."

23. S.K. Viall, "Life Work of Centennial Engine," Power 42 (July 14, 1915) 52-54. This article listed the following dimensions of the engine:

Cylinders	40 inches by 10 feet
-----------	----------------------

Main steam line	18 inches diameter
-----------------	--------------------

Piston rods	5-1/4 inches diameter
Walking beams, web patter	27 feet long, 9 feet wide at center, weight 11 tons each.
Connecting rods	25 feet long, 10 inches diameter at center, tapering to 6 inches at ends
Cranks, one on each side of flywheels, mounted outside crankshaft bearings	Weight - 5 tons each.
Crankshaft	19 inches diameter, 12 feet long
Bearing for Crankshaft	18 inches diameter, 24 inches long
Geared flywheel, mounted between bearing	29 feet diameter, 24 inch face, pitch of gear 5-1/3 inches, 215 teeth wheel beneath the floor.

24. See Fig. 2 of Viall ("Life Work of Centennial Engine," p. 53) for an excellent diagram depicting the layout of the line shafting as of 1906.

25. Doty, Town of Pullman, pp. 43-44. Viall's figures largely agree with those given by Doty, though Viall claims that there were 2,464 linear feet of main line shafting, and 89,000 feet of belting. ("Life Works of Centennial Engine", p. 53).

26. Doty writes: "The engine was rated at 2,400-horse power by builder, yet it has developed 2,500 horsepower...." According to Viall ("Life Work of Centennial Engine," p. 54), the greatest power ever developed from the engine was in "1887-1888," when indicator diagrams showed 1260 h.p. for the north engine or 2,520 h.p. for the entire unit. The strain upon the engine due to this load was so great that it cracked the brick foundation on which the engine stood, and it was necessary to pour 2200 lbs. of lead into the cracks that developed.

27. Doty, Town of Pullman, pp. 44-45.

28. Ibid., pp. 69-70.

29. Ibid., pp. 152-153

30. Ibid., p. 153.

31. "Pullman," Western Manufacturer, p. 215. The bridge carried traffic on two levels, i.e. the second and third floors. Consequently, the Pratt truss was counterbraced along its entire length to insure stability under all possible loadings.

32. "Pullman Palace Car Works", p. 132. The article elaborated: " The carving is done by hand only so far as it applies to the use of the hands to guide the ingenious machine that is worked by steam power. The carving machines are suspended in such a way that they can be carried at will from one point to another by the operator. The effective part of the machine somewhat resembles the top of the letter T. When it is desired to carved a certain pattern, a completed pattern is placed directly under the right-hand upright. The operator guides the sharp pattern, but the tool has no power to cut. On the left upright is a small chisel, which the power revolves at the rate of 10,000 times a minute. The adjustment of the machine is so perfect that the right-hand guide brings lines of a duplicate pattern and cuts it out in a very few minutes. After that, the patterns are turned over to hand carvers, who put the finishing touches on places where the grain has been somewhat ruffled, and dress them up generally. All the beautiful carving seen on the interiors of palace cars is done by this process. . ."

36. Andreas, History of Cook County, p. 624.

37. Doty, Town of Pullman, p. 28.

38. "Pullman Palace Car Works," p. 132.

39. "Pullman," Western Manufacturer p. 215.

40. Doty, Town of Pullman, p. 103.

41. Ibid pp. 38-40 and "Pullman Palace Car Works," Railroad Car Journal, pp. 133-134.
42. "Pullman Palace Car Works, Railroad Car Journal, p. 134.
43. Doty, Town of Pullman, pp. 205, 87, 150. See pp. 90-92 for a description of the glass industry at Pullman.
44. "Pullman Palace Car Works" p. 134.
45. Carwardine, Pullman Strike, pp. 75-76.
46. Town of Pullman, p. 125.
47. Ibid., pp. 145-150.
48. Ibid p. 141 and "Pullman Palace Car works" Railroad Car Journal p. 1131.
The marble was usually from Tennessee; at times, however, Italian marble was used.
49. Town of Pullman p. 155. Though mentioned in the press, the whereabouts of the Suspension Car Truck Company is unknown.
50. Duane Doty, "Pullman Car Trucks," Railroad Car Journal, April 1895, from "Scrapbooks Misc., "Ser. B. Vol 4, p. 125. Doty's complaint that "The day has not yet arrived when Master Car Builders are willing to avoid insisting

upon the incorporation of certain features of their own in the work when they order trucks built" is evidence that car building was not a standardized operation. Doty continues: "It is hoped that, in the sweet by-and by, Master Car Builders will agree upon standards for all car work, and even for finished cars." Doty includes a list of materials used in building a pair of Pullman car trucks, along with one photo and one drawing of the trucks.

51. "Paper Car Wheels--How They Are Made," Western Manufacturer, July 15, 1880: 36.
52. "The Allen Paper Car Wheel," Western Manufacturer, 9 (November 30, 1881): 291 and "Paper Car Wheels," Railroad Gazette, June 3, 1887, from "Scrapbooks Misc.," Ser. A, Vol. 10, p. 92.
53. Ibid. "In reference to increased life of axles with the paper wheels, it has been found that 100,000 miles is the maximum service that can be gotten from axles with iron wheels; while the axles under hotel cars equipped with paper wheels have average over 500,000 miles each" For additional claims, see Railway Age for April 3, 1879, "Scrapbooks Misc.," Ser. A, Vol. 5, p. 5.
54. Several Articles relating to the controversy over the paper car wheel appear in "Scrapbooks Misc." Ser. A, Vol. 6. They are:

Railway Age August 18, 1881, pp. 35-36.

Railway Age September 1, 1881, pp. 46-47.

Railway Age September 8, 1881, pp. 56-57.

Railway Age September 29, 1881, pp. 70-71.

Railway Age October 13, 1881, p. 76.

Illinois Railway World November 1881, p. 89.

St. Louis Railway Register December 3, 1881, p. 98.

55. Telephone conversation with John White, Curator of Transportation, National Museum of History and Technology, Smithsonian Institution, Washington, D.C., August 5, 1976. This museum owns three paper car wheels one of which goes out on loan. Also see "Paper Car Wheels Roll into the Discard," Pullman News, April 1923, p. 364.
56. Doty, Town of Pullman, pp. 20-21. Plans of the "New Works of the Allen Paper Car Company at Chicago, Ill.," were included in a supplement to American Engineer 1, May 1880: 80. The fold-out plans face p. 72 and include plans of rear and front elevations, second and ground story and transverse section through store rooms.
57. This account of the manufacturer of paper wheels is taken from Doty, Town of Pullman, pp. 21-23. It substantially agrees with another description, "Paper Car Wheels--How They Are Made," Western Manufacturer 8 (July 15, 1881): 136.
58. According to Railway Age, May 25, 1882: "The tires [used by the Allen Paper Car Wheel Company] are of the best German steel, made at the Krupp Works in Prussia. . . American tires are not used, it is stated, because they are not yet made in sufficient numbers to supply the demand." From "Scrapbooks Misc.," Ser. A, Vol. 5, p. 185.

59. "D. Doty," Historic Pullman Foundation Archives, p. 36. Doty writes:
"Major Woods resides in one of our best houses and pays \$50.000 a month for rent." No doubt, this refers to one of the two large detached houses at the corner of Pullman Avenue and 108th Street, directly opposite the Allen Works.
60. "Pullman's Palace Car Works," p. 131.
61. Town of Pullman p. 153.
62. "American City of Pullman," p. 74.
63. "Pullman," Western Manufacturer, p. 214.
64. Ottawa (Ontario) Daily Free Press September 9, 1882, from "Scrapbook Misc.," Ser. A, Vol. 7, pp. 50-51. There is strong evidence that a transfer table was built in the Susquehanna Shops of the Erie Railroad in 1854-66.
65. Doty, Town of Pullman, pp. 153-154.
66. Andreas, History of Cook County, p. 622. Andreas writes: "There are twenty-four of these stalls representing twenty-four stages of progress in car-building: the embryonic mass of rough timbers and car-trucks in the first stall proceeds through its various mechanical and distinct processes, until it emerges from the twenty-fourth chrysalide stall a perfect butterfly of a dining-room or sleeping car... Each stall has its corps of workmen, and their portion of the work is always the same...."

67. "Pullman's Palace Car Works," p. 131.
68. Doty, Town of Pullman, pp. 153-154.
69. John White of the Smithsonian also stated that passenger cars at Pullman were fabricated in "approximately four or five different stalls."
70. H. B. Reed, "Old Freight Shop Days, "Pullman Car Works Standard, October 1917, p. 3.
71. "Scrapbooks Misc." Ser. A, Vol. 6, p. 30.
72. Doty, Town of Pullman, pp. 72-73. Power for the Freight Shops was initially supplied by the Corliss engine and the 1885 insurance map indicates that a conveyor belt 20 feet high channeled wood shavings to the Boiler House for use as fuel. A separate power source was introduced at the time of the shop's expansion in 1889.
73. "Pullman Palace Car Works," Railroad Car Journal, p. 132.
74. Doty, Town of Pullman, pp. 72, 73, 74.
75. "Pullman Palace Car Works," p. 132.
76. Doty, Town of Pullman p. 73.

77. Ibid., pp. 73, 72. According to Railway Register September 12, 1885 "Scrapbooks Misc.," Ser. A, Vol. 9, unpagged, "the first car was completed in two hours and a quarter, and before 11 o'clock, twelve cars moved out of the shops. the entire 100 were finished by 5 P.M., and an hour later 24 of them were lettered and ready to ship." Reed ("Old Freight Shop Days," p. 3) recalls this record production: "To celebrate the occasion properly [the freight shop workers] hitched an engine to one of the cars, loaded all aboard, and with plenty of good things to eat and drink proceeded to the little woods (north of 103rd Street), and made jolly day of it."
78. Town of Pullman, p. 74.
79. Ibid., p. 73.
80. "Pullman Palace Car Works," p. 133.
81. Ironically, Pullman Standard sold this building some years back and, now that it has returned to the business of car building, today rents a portion of it for the warehousing of prefabricated car parts.
82. Manual Illustrating a Few Patterns for Architectural Iron Work by the Union Foundry and Pullman Car Wheel Works, ed. by C. W. Trombridge (n.p., J.M.W. Jones S & P Company, 1885) and an unidentified newspaper clipping (c. May-July 1831) in "Scrapbooks Misc.," Ser. A, Vol. 6, p. 16. A copy of the foundry catalog can be found at the Chicago Historical Society.

83. Chicago Tribune, June 14, October 2, 1882, from "Scrapbooks Misc." Ser. A, Vol. 7, pp. 10, 64.
84. Town of Pullman, p. 198. The Columbia Screw Company, described previously, at one time occupied a small portion of the foundry and employed 50 additional workers.
85. March 31, 1884, from "Scrapbooks Misc.," Ser. B, Vol. 1, p. 6.
86. "Pullman Palace Car Works," Railroad Car Journal, p. 133.
87. This account of the operation of the wheel foundry is taken from Doty, Town of Pullman, pp. 194-195, and "Pullman Palace Car Works," Railroad Car Journal, p. 133. The account of the rest of the foundry complex which follows is drawn from Doty, pp. 193-198.

According to Doty, every car wheel had a serial number cast upon it with the date of the casting, and "the records kept are such that at any time while the wheel is in service, it can easily be ascertained who molded it, at what hour of the day it was poured, and of just what mixture of iron it was composed.

88. Andreas (History of Cook County, p. 627) calls this the "architectural foundry", noting that the Union Foundry and Pullman Car Wheel Works "make all the castings for the National Mortising Machine Company, of Chicago, and likewise make the large castings based in the Board of Trade building.

There seems to be no reason why the Union Foundry should not rival the celebrated works of the Carnegie Brothers."

89. Doty, Town of Pullman, pp. 195-198. Hollow castings were made by pouring the molten iron around a "core". The cores were prepared in the core room at the north end of the foundry building from the mixture of fine sand and flour, formed into molds the exact shape of the hollow interior of the casting, then baked hard in an oven. The core was then place into its mold, and the iron was pured, solidifying in a few seconds. When cold, the core was easily removed, being burnt and easily crumbled. Like other foundries of the period, young boys were frequently employed to prepare the cores by ramming the sand and flour mixture into the variously shaped molds.

CHAPTER VI

The Social Experiment

In creating the town of Pullman, George Pullman sought more than mere residences for his workers.¹

The guiding philosophy behind the experiment was his belief that behavior was greatly influenced by environment. The concept that workers living within pleasant surroundings would be better workers than those whose surroundings were bad was a theme constantly reiterated to reporters.² To a correspondent for the New York World, Pullman said:

I have always held that people are very greatly influenced by their physical surroundings. Take the roughest man, a man whose lines have always brought him into the coarsest and poorest surrounding, and bring him into a room elegantly carpeted and furnished and the effect upon his bearing is immediate. The more artistic and refined the mere external surroundings, in other words, the better and more refined the man.³

A crucial corollary to the idea that tasteful surrounding would have a refining effect on the town's inhabitants was the belief that improved surroundings would yield a financial return for the company. "[The town of Pullman] will show that it is not only a kind and benevolent thing for employees to make the workingman comfortable and content, but a profitable thing" according to Railway Age.⁴ Five years after the Pullman Strike Theodore Dreiser succinctly stated the case. "It was Mr. Pullman's idea that in a manufacturing town, where every

home was neat and tasteful, the working men would turn out more work, better work and more profitable work than in a place where opposite conditions existed."⁵

The town of Pullman was intended to be a complete, planned community. "The grouping of buildings and trees to produce a pleasing effect is studied as diligently as the arrangement of machines in the shop," wrote Pullman's first sanitary engineer, Benezette Williams, in 1882.⁵ A reporter for the Western Manufacturer declared that foreign correspondents could no longer deprecate the American manufacturer for his want of cultivation and taste: "Here [at Pullman] we have the realization of the true aesthetic taste, the blending of the useful and the beautiful, on a scale never dreamed of by these critics of American taste and appreciation. As such a realization, the town of Pullman stands without parallel in the world."⁷

All of the houses and flats at Pullman were rented, George Pullman later explaining that "it was not the intention to sell workmen homes, but to so limit the area of the town that they could buy homes at convenient distances from the works, if they chose to do so." Pullman further stated that "If any lots had been sold in Pullman it would have permitted the introduction of the very baneful elements which it was the chief purpose to exclude..."

The following figures, compiled by Pullman's "resident statistician and engineer" Duane Doty, show the rapid rate at which the town grew:⁹

Date:	Population:
January 1, 1881	4
March 1, 1881	57
June 1, 1881	554
February 1, 1882	2,084
March 8, 1883	4,512
August 15, 1883	5,823
November 20, 1883	6,585
September 30, 1884	8,513
July 28, 1885	8,503
July 1, 1886	8,861
October 1, 1885	9,013
October 1, 1887	10,081
July 1, 1888	10,560

Residents of the model town reputedly enjoyed a city "built artistically in every part, and from a central thought within one man. As in the cars built and operated by the Pullman Company, art is a conspicuous feature here."¹⁰ The Western Manufacturer in 1881 declared: "...it would appear that nothing has been forgotten or omitted that might tend to please the eye, gratify the taste, promote intellectual and physical culture, and minister generally to the health and enjoyment of the people who are so fortunate as to become residents of this ideal industrial city."¹¹ Perfect drainage, comfortable and attractive homes, paved streets lined with shade trees artistic drives and parks, an Athletic Island for physical recreation, a theater and library for intellectual

improvement, convenient shops and markets: These were but some of the elements touted as "the grand provision for the comfort and well-being for Labor by Capital."¹² The fact that the library membership never exceeded 200 (a \$3.00 annual dues was charged), that Pullman's religious groups were not able to afford the rent charged for use of the church and so met in public halls, that the rent structure obliged a majority of Pullman families to take in boarders, and that the long term success of the sewage farm was debatable were items not readily grasped by journalist visiting only for a day.¹³ A writer for one Chicago daily visited the model city and commented enthusiastically:

The town is so well laid out, the houses have such a cheerful aspect, the children look so happy, and the working men as they go to and from the shops seem so conscious of their favorable surrounding, that the visitor is agreeably impressed. No other living American has ever reared such a monument.¹⁴

Favorable first impressions were the result of deliberate design. An observer for the Chicago Tribune remarked:

The most pleasing part of the model city presents itself to the passing observer. The lawns and lakes, handsome public buildings, the elaborate ornamentations of the large works can be seen from the railroad cars as they whirl by. It will take a little time to discover the tenement houses known as 'the barracks' the villagers, and the unsightly wood shanties near the brick yards where the brick-makers with large families live.¹⁵

The church, the Arcade hotel, parks, the ornamental Administration Building, and the neat homes of the "mechanics"--all could be seen at a glance from the tracks. Official visitors to the town were left in the care of Duane Doty, George Pullman's "right hand man,"¹⁶ and in most cases saw little beyond the "postcard from the railroad."

Journalist Richard T. Ely, on assignment for Harper's Magazine, visited the town in the fall of 1884 for a period of ten days. His relatively long-term observation allowed him to investigate Pullman more closely than previous reporters. The result was his article "Pullman: A Social Study," which appeared in 1885.¹⁷

Ely appreciated the town's physical qualities, writing that "In the way of material comforts and beautiful surroundings Pullman probably offers to the majority of its residents quite as much as they are in a position to enjoy, and in many cases even more." Yet he detected unpleasant features of social life at Pullman that moderated his enthusiasm for the experiment. One was a pervasive feeling of insecurity -- "Nobody regards Pullman as a real home"--engendered at the car works by favoritism and nepotism among officials, causing uncertainty as to employment, retention and promotion of employees; and at home by the standard rental lease, which could be terminated on ten days' notice by either landlord or tenant. Ely thought the company's monopoly too powerful. Three-fourths of the laborers at Pullman were employed by the Palace Car Company; the remainder were employed at establishments owned or controlled by either the company or one of its prominent members. Large as the town was, it supported no newspaper, "through which complaints might find utterance." Residents dared not speak openly their opinions of the town, believing that they were watched by the "company's spotter." Laborers at Pullman were not permitted to own property, and Ely noted a repression of any marked individuality: "Everything tends to stamp upon its residents, as upon the town, the character expressed in 'machine-made'." Ely concluded that "the idea of Pullman is un-American...It is benevolent, well-wishing feudalism, which desires the happiness of the people, but in such a way shall please the authorities."¹⁸ His observations would prove prophetic.¹⁹

In assessing the experiment at Pullman it is important to consider it in light of workers' living conditions elsewhere. There was some truth to Doty's assertion that "Nowhere, in this industrial age, is there any other entire community of working people provided with such desirable homes as here." In the context of late nineteenth century industrial conditions, Pullman's operatives at the very least enjoyed a more desirable physical environment than comparable workers who lived in America's cities. According to a report made by the Commissioners of the State Bureau of Labor Statistics:

The rentals at Pullman are a little higher for the same number of rooms than in Chicago, but in Chicago the tenement would be in a narrow street or alley, while in Pullman it is on a broad avenue where no garbage is allowed to collect, where all houses have a back street [i.e., alley] entrance, where the sewage arrives at a farm in three hours' time from its being deposited, and where beauty, order and cleanliness prevail, and fresh air abounds.²¹

The great hopes of some were placed in the success for the Pullman experiment. The believer that "Here can be adjusted finally, if anywhere, the great question of labor and capital...."²² characterized the views of many observers most of whom were disposed to the interests of capital. The solution, in Pullman's mind, was a simple one: care would be taken for the health and comfort of the workmen; efficient and accurate work would result for the employer. The case was stated best by C. L. Pullman, an elder brother of George Pullman, who for a time was associated with the company:

We are firm believers in the town system as in vogue at Pullman and think that it is the key to labor troubles. We have one of the best contented communities in the world for the simple reason that they [the workers]

are prosperous. They make money for the company and homes for themselves.²³

George Pullman's belief in the "town system" led him to predict the establishment of other such communities in the future:

What I expect to prove by this enterprise is that these favorable and healthful conditions, comfortable homes and widening opportunities can be secured for laborers at the same time that a reasonable per cent and permanency of investment is secured for investors. Capital will not invest in sentiment nor in sentimental considerations for the laboring classes. But let it once be proved that enterprises of this kind are safe and profitable, and we shall see great manufacturing corporations developing similar enterprises, and thus a new era will be introduced in the history of labor.²⁴

This theme, was echoed by the Chicago Journal of Commerce in 1896, when it rather hastily announced, "Pullman is no longer an experiment. It is a fixed fact, the problem is solved, and the result is one of the assurances upon which the nation may proceed to build its industrial structure."²⁵

Regardless of these claims, Pullman remained a unique specimen within the history of American industry. Many company towns were built in America but none attempted to restructure the lives of the workers in the manner of George Pullman's social experimentation. In many ways the strike of 1894, and its national repercussions, underscores the unique status and importance of the "Pullman Experiment" within the development of 19th century American industry. Discussion of the Pullman Strike is beyond the scope of this study, but it obviously comprises a watershed in the social history of the community. Any hopes of understanding the complete social significance of Pullman must be predicated upon an in-depth analysis of both the strike itself as well as the events and circumstances that preceded and followed it.

FOOTNOTES

1. Boston Herald, August 1, 1881, from "Scrapbooks, Misc.," Ser. A., Vol. 6. In an article which was subsequently reprinted and sent to all P.P.C.C. stockholders, there appeared the statement, "The town of Pullman is not intended to be a village for employees of the car works, as has been the impression in some quarters, but as a model industrial town..."
2. "Scientific City," Scientific American Supplement, p. 6840.
In Railway Age, May 12, 1881, from "Scrapbooks, Misc.," Ser. A, Vol. 6, p. 15, an article appeared proclaiming "...while the car works being established here are remarkable for their size and perfectness...it is in relation to such a village or city as is here being built up by a single organization...that this enterprise shows its grandest phase."
3. Quoted in the Pullman Journal, January 14, 1893.
4. Railway Age, May 12, 1881.
5. "Town of Pullman," Ainslee's Magazine, March 1899, p. 191.
6. Williams, "Pullman Sewerage," p. 312.
7. Doty, "Pullman," p. 214.
8. Strike Statement, p. 2.

9. Duane Doty, "Pullman: Mechanical Industry," Pullman Review, May 28, 1891, from "Scrapbooks, Misc.," Ser. B., Vol. 3, p. 37.
10. Doty, Town of Pullman, p. 19.
11. "Pullman," p. 215.
12. Ibid.
13. See Buder, Pullman, pp. 53 and 57; and Doty, Town of Pullman, pp. 30 and 46. Doty writes: "probably not less than 900 families in Pullman have one or more boarders or roomers." Doty's statement that "The Greenstone Church . . . was necessary architectural feature in the general grouping of our monumental buildings. . ." supports the view that the church was intended more as a showpiece than a community facility. The church remained vacant until 1885, when the rent was reduced and the building was leased by the Presbyterians.
14. Chicago Times, December 17, 1837, from "Scrapbooks, Misc.," Ser. A., Vol. 10, p. 179.
15. Chicago Tribune, September 21, 1838.
16. "Pullman Car Works at Pullman, Ill.," Railroad Car Journal, p. 131. Pullman himself is known to have spent little time at the model city. Conversation with Florence Pullman Lowden, July 29, 1975.

17. Pullman Journal, January 14, 1893.
18. Harper's New Monthly Magazine, Vol. LXX, 1885, pp. 452-466. In his autobiography, Ely writes: "This article was later judged by H. M. Auden, editor of Harper's, to be the best magazine article of the year. It received an immense amount of attention and I believe it threw some much needed light on the Pullman strikes which occurred later." See Richard T. Ely, Ground Under Our Feet: An Autobiography (New York: Macmillan Company, 1938), pp. 166-171.
19. Ely, "Pullman," pp. 463-465. The "unpleasant features" of Pullman were discussed by other contemporary writers; see John Gibbons, Tenure and Toil; or Land, Labor and Capital (Chicago: Donohue & Henneberry, 1894), pp. 187-191; and William H. Carwardine, The Pullman Strike (Chicago: Charles H. Kerr & Company, 1894; reprinted., 1973).
20. Town of Pullman, p. 5.
21. Report of the Commissioners of the State Bureau of Labor Statistics on the Industrial, Social and Economic Conditions of Pullman, Illinois (n.p., 1894), p. 11.
22. "Pullman's Palaces," unidentified news clipping from "Pullman, George Mortimer, 1831-1897" ms. file, Chicago Historical Society, Chicago, Illinois.

23. Kansas City Times, April 22, 1887, from "Scrapbooks, Misc.," Ser. A., Vol. 10, p. 77.

24. Chicago Journal of Commerce, April 7, 1886, from "Scrapbooks, Misc.," Ser. B., Vol. 1, p. 43.

25. Ibid.

Evolution of Town and Shops

Between 1887 and 1907 the physical plant of the Pullman industrial complex and town underwent considerable growth, and to a lesser extent, alteration. At the beginning of this period the Pullman Palace Car Company was, as stated by George Pullman in his October 1887 address to the stockholders, enjoying a considerable degree of prosperity and the works at Pullman were playing a substantial role in this success. In the previous year, an average of over 4,000 workers at the car works had manufactured approximately \$6 million dollars worth of products and the region within a mile radius of the arcade contained 15,000 residents. Given such conditions, it is not surprising that the company decided to expand its manufacturing and housing facilities.

In October 1887, Railway Review gave notice of plans for a new repair shop capable of servicing 45 cars at one time, making it, reputedly, "the largest of its kind in the world."² About 500 men would be employed in these new shops located immediately adjacent to the rear erecting shops on 111th Street. According to one newspaper account, the new shops were to be one story "except the south fifty feet, the second story of which will be used as an upholstering shop."³ Soon thereafter, in 1889, extensive additions were made to the Freight Car Shops to enlarge their capacity.⁴ A new Corliss Engine was built by the M.C. Bullock Co. to service this department, the Allen Paper Car Wheel facilities, and the Iron Machine Shop. G. C. Bushman, an "accomplished mechanical expert" at Pullman was credited with setting up the engine.⁵

The first instance of major destruction within the industrial plant at Pullman occurred in March 1890, when fire destroyed the Hammer Shop, a large frame structure sheathed with corrugated iron, located directly north of the water tower. Nearly all of the machinery inside was destroyed.⁶ Work resumed beneath temporary sheds,⁷ and a new iron building was completed by at least 1893.⁸

Several important additions were made to the plant in the early 1890s, all designed by S. S. Beman, who continued to serve as the company's architect. In October 1891 Inland Architect announced that Beman was preparing plans for a "two-story laundry, 70 by 154 feet; to be of common brick, with gravel roof, have steam heat, electric light, and cost \$50,000."⁹ This was built during the summer of 1892 to serve the Chicago division of the operating company.¹⁰ Beman also prepared the plans for a new one-story repair shop, 400 feet long by 200 feet wide.¹¹ This shop was situated just east of the repair shop constructed in 1887, and the two buildings were separated by a steam-operated transfer table. The erection of these facilities, and the construction of fire station in 1894 represent the final major additions to the car works prior to the change to all steel production c. 1908-1910.

The manufacturing of street cars became a serious part of the company's business in the late 1880s when the Pullman Carpenter Works were altered and expanded "to meet the anticipated demands of the future." By 1888 over 300 men were employed in the street car facilities between Lake Calumet and South Pullman.¹² That same year, work was begun on an electric street railway to serve Pullman. The line extended from 104th Street south past the Allen Paper Car Wheel Works, the

Administration Building, and the Hotel Florence to Kensington. Connection on the north was made with the Calumet Electric Street Railway. "The prime object of the Pullman electric street railway," according to one observer, "is to afford the company an easy opportunity of exhibiting all electric systems to customers."¹³ Operation of the line did not begin until 1892 and the enterprise operated at a loss for several years before it was transferred to the Calumet street railway system.¹⁴

Throughout the period 1880-1908, car production techniques -- if not the design of the cars themselves -- remained relatively static.¹⁵ The plant was geared for the production of essentially all-wooden cars with lumber yards constituting a major portion of the plant's acreage and wood workers a major portion of its employees. The production capacity for passenger and freight cars was increased and the production of street cars introduced. Car production continued well into the 20th century; by 1938, Fortune reported that the Pullman Company was the largest manufacturer of both freight and passenger cars in the country.¹⁶ However, the manufacture of street cars proved to be less profitable and was abandoned in 1900. At this time the shops at the foot of 114th Street were expanded and converted into a repair facility known as the Calumet shops.¹⁷

Development of new auxiliary industries continued at Pullman during the final years of the 19th century. In 1889 the knitting mills were established at 106th Street and Cottage Grove Avenue, just north of the Freight Car Shops. According to Doty, "they were built for the purpose of making socks and stockings, and knitting underwear, though up to this date (1893) their work has been limited to hosiery."¹⁸ By 1893, another auxiliary industry had been established at

Pullman, that of Columbia Screw Company, which supplied all of the screws used in the construction of Pullman cars. Their works were initially located in the "southwest corner of the Union Foundry" and employed 50 people. However, by 1901 the Columbia Screw company occupied the structure originally housing the knitting mills.¹⁹ It is not known when operations in the knitting mill ceased.

Expansion of the residential community continued until the advent of the strike in 1894. In the early 1890's two new rows of dwellings were constructed on Stephenson Avenue, between 114th and 115th Streets. Although designed with the appearance of single-family dwellings, each bay actually represented the entrance to three apartment flats. Fire destroyed the original Market Hall in April 1892²⁰ and S. S. Beman received a commission for a new market house that summer.²¹ It was completed by 1893. The new market -- three stories tall, of pressed brick, terra cotta and stone -- featured four complementary "colonnade" buildings at each corner of the square, which served as apartments. Together, these buildings represent some of Beman's most distinguished work.

While it is not the intent of this paper to investigate the history of the Pullman Strike, it is important to note that the great labor upheaval of 1894 marked a distinct turning point in the history of the Pullman Palace Car Company and its relation to the model city.²² It marked a dividing line between the old order and the new, the end of a "social experiment" as well as the company's proprietary interest in its employees. The strike would give rise, beginning in 1895, to court cases questioning the right of the company to own and control property other than that directly related to its manufacturing interests.

It would be wrong to lay the origins of the strike at Pullman solely on the depressed business conditions of 1893-1894 and the Pullman Company's consequent reduction of wages to a bare minimum. Dissatisfaction with conditions in the model town were manifested as early as 1884. That year, a writer for the journal Mechanics described Pullman and pondered "the success or failure of the social experiment there working out its still doubtful solution:"

During a recent visit to Pullman, we had an opportunity of seeing a phase of its social life which is not usually shown to visitors.... We refer to the rears and insides of the mechanic's dwellings. The system of sanitary policing which maintains the cleanliness of streets, sidewalks and front doors, extends also to back yards and interiors. The dwellings of the mechanics are neat, wholesome and attractive, and it cannot for a moment be doubted that those who live at Pullman are more comfortable in all respects, and can purchase with the fruits of their labor better living accommodations, better and cheaper food, better facilities for the education of their children, better amusements and better surroundings in all respects, than they could elsewhere. But it is unfortunately true that those most directly and immediately benefitted by such a system are most restive under its restraints and conditions.²³

The author contended that such restraints as the prescription of saloons were resented as "an interference with the exercise of their rights as citizens of a free country." The majority of Pullman residents who benefitted from the company's surveillance also were said to "chafe at the oversight exercised in their interest, and feel impatient of the paternal relation which the company's agents maintain toward all who reside in the town."²⁴

An additional source of grievance at Pullman was the fact that its residents were not allowed to own their homes. According to one reporter, "it was not compulsory that workers reside at Pullman, but the men believe that in case of dull times, the first employees to be discharged would be those living elsewhere" ²⁵ By 1888, some Chicago newspapers had grown critical of the place, and a retrospective series on Pullman appearing in the Chicago Tribune pronounced: "There is a troublesome sameness, and monotony about the tasks of men would assert themselves." The writer concluded that "Landlordism does not thrive in America, even in industrial communities." ²⁶ The series reported, too, on the grumbling at Pullman regarding the high charges for rents and utilities: "The rent question is the burning one at Pullman. It smolders, but it may blaze forth at any moment." Gas was reported furnished at \$2.08 per thousand, "though the consumers assert that it is manufactured at a cost of about 75 cents per thousand." ²⁷ Finally in a review of John Gibbon's book Toil and Tenure, which included a critical assessment of Pullman, a writer for the Chicago Herald declared that "this community of 10,000 people is in fact a monarchy ruled absolutely by a single man," and concluded: "The town of Pullman can no longer be regarded as a social-industrial experiment. It is solely a manufacturing center in which the proprietor sells certain accommodations for a good round price. . . ." ²⁸

Company control of the town was dislodged in three steps. First came the annexation of Pullman to Chicago in 1889, next came the strike itself, which served to focus national attention on the nature of the company's relation to its employees, and finally in 1898 the Illinois Supreme Court ruled that the Pullman Palace Car Company's charter did not permit it to hold real estate beyond that necessary for the conduct of its manufacturing business.

In 1895, Pullman won a circuit court suit filed by the Illinois Attorney General that sought to have the company forfeit its charter. The lower court held that the erection of dwellings was within the legitimate powers of the corporation, but ordered the company to sell its stock in the Pullman Iron and Steel Company and 23 acres of unoccupied land.²⁹ This decision was reversed three years later by the Illinois Supreme Court, who gave the company five years to dispose of its holdings which were not directly involved in rolling stock production.³⁰ On October 19, 1897, one year prior to the announcement of the Court's decision, George Mortimer Pullman died of a heart attack, alone at his home on Prairie Avenue. He was 56 years old.³¹ In July 1899, Architect S. S. Beman spent two days at Pullman, planning alterations in the Arcade, Market Hall, hotel, church and school. New heating systems were required prior to their sale, since these buildings were supplied with steam from the boilers of the car works.³² The following month, the Pullman Gas Company was transferred to the Peoples Gas Light and Coke Company, the principal consideration being that Peoples would furnish the Pullman works with gas at a nominal rate for a specified term of years. The new company connected its own mains with those already at Pullman, and the Gas House was abandoned.³³ By 1904, Pullman had disposed of the brickyard, the Casino, and the stables.³⁴

An additional five year extension of the deadline for disposal of non-essential holdings was granted to the company in 1904 and by 1907 the Pullman Company had sold all its non-industrial interests in the region. George Pullman's daughter, Florence Pullman London, reportedly purchased 99 buildings on Fulton and Stephenson Avenues for \$352,000; her purchase included "425 flats and twenty-two houses, all occupied and in good order."³⁵ Hattie Sanger Pullman, George Pullman's widow, purchased the Arcade Building for the sum of \$50,000.³⁵

A few minor alterations in the industrial plant at Pullman after 1894 were directly related to the Pullman Strike and its consequences. In November 1894, "incendiaries" set fire to the three-story brick pattern shop of the Union Foundry, destroying it completely.³⁷ The following year, as a precautionary measure, George Pullman ordered the construction of brick wall, 8 feet high, to surround the entire plant at Pullman. The new fortification contained only a few gates, and according to one newspaper, cut off much of the space near the Foundry formerly used by the residents of North Pullman.³⁸

George Pullman's death in 1897, the court ruling against the company the following year, and the operation of the Pullman Palace Car Company under a new leadership which cared less for aesthetics than business, wrought even more decisive changes in the appearance of town and shops. "Pullman Is Doomed!" proclaimed the headline in the Chicago InterOcean:

Pullman, as an object of interest to the visitor from abroad and as a showplace to the traveler coming and going on the Illinois Central, is doomed. Radical changes embodying the destruction of "model town's most distinctive features. . . have already been decreed."³⁹

Engineer Duane Doty reportedly prepared the plans for the extensive changes at the Pullman works that took place in 1899. The Illinois Central Railroad reclaimed an old right-of-way lying adjacent to the east side of its tracks between 107th and 113th Streets. The Calumet Electric Railway relaid its tracks in a straight line parallel to those of the I.C., and Cottage Grove Avenue was opened on a straight line from 107th Street to 115th. These changes required the filling in of the artificial Lake Vista. The portion of Lake Calumet between

the car shops and the Athletic Island was also filled in to give the company additional room for expansion. The Athletic Island became a network of switch tracks and railroad yards. The clubhouse on the island was torn down and a roundhouse rose in its place. The Chicago Tribune, January 31, 1899, commented that "certain it is the demands of increased trade conditions are paramount to mere sentiment or the claims of physical environment."⁴⁰

At the turn of the century, the shops at Pullman reportedly were running to full capacity,⁴¹ with a larger number of employees on its rolls than ever before. The company's annual statement for 1898 showed a total of 5,994 employees.⁴² Two years later, this number had increased to 7,152.⁴³ The Pullman Company in 1899 had acquired the assets of the Wagner Palace Car Company, for many years its chief competitor, and in so doing, had added the names of William K. Vanderbilt and J. Pierpont Morgan to its Board of Directors. Pullman now held a virtual monopoly on long-distance day and night travel.

The destruction of the ornamental features of Pullman followed on the heels of such flush times and was championed by Duane Doty, who for years previous had been the model town's greatest promoter. Robert Todd Lincoln, who served as Pullman Company president from George Pullman's death until 1911, manifested little concern for the aesthetics of the enterprise; in fact, architect S. S. Beman's revisions of the heating systems for Pullman's public buildings proved to be his last commission from the Pullman Company. From the perspective of the late 1930s, Beman's assistant on the project at Pullman, Irving Pond, wrote:

The little empire (Pullman) fell because the public then would not stand for in the individual what it is now upholding in the theories and

practices of the Federal Government. Since the death of George M. Pullman, no one has had either power or inclination, seemingly, to maintain what he so brilliantly started, and not only started, but achieved. The beauty which was created and for some time existed is now swallowed up in the ugliness of industrial Chicago. The heart is gone out and what is left is the machine.⁴⁴

Thereafter, the company called on Frank N. Jobson for its work, an architect who (no doubt by request) made few concessions to aesthetics in his work and little attempt to harmonize with what came before.

FOOTNOTES

Evolution of Town and Shops

1. Chicago Tribune, 14 October 1887, from "Scrapbooks, Misc.," Ser. A, Vol. 10, p. 136. Pullman also proudly announced that savings deposits in the Pullman Bank were "\$223,952 against \$144,922 one year ago."
2. Railway Review, 15 October 1887, from "Scrapbooks Misc.," Ser. A, Vol. 10, p. 138.
3. Chicago Tribune, 20 March 1887, from "Scrapbooks Misc.," Ser. A, Vol. 10, p. 67.
4. Chicago InterOcean, 24 February 1889, from "Scrapbooks Misc.," Town of Pullman," 1887-1890, unpagged.
5. Arcade Advertiser, 9 March 1889, from Ibid.
6. Chicago Journal, 20 March 1890, from "Scrapbooks Misc.," Ser. B, Vol. 2, p. 51.
7. Pullman Car Works Standard, 1 (February 1917): 4.
8. Doty, Town of Pullman, p. 103.
9. "Synopsis of Building News," Inland Architect, 19 (October 1891): 33.

10. Doty, Town of Pullman, p. 126. According to the Chicago Record-Herald, 4 May 1903, [from "Scrapbooks Misc.," Ser. B, Vol 4, p. 203], in 1903 the laundry was converted to a machine shop during a strike by "50 girls" employed in the department and thereafter such work was contracted out.
11. "Synopsis of Building News," Inland Architect, October 1891, p. 33.
12. Chicago Tribune, 20 September 1888, from "Scrapbooks Misc.," "Town of Pullman," 1887-1890, unpagged.
13. Chicago Herald, 19 August 1889, from "Scrapbooks Misc.," "Town of Pullman," 1887-1890, unpagged.
14. Letter from Robert Todd Lincoln to Mr. Hulbert, 3 June 1899, Pullman Collection, Newberry Library, Chicago.
15. McLean, 100 Years in Illinois, pp. 249-250. McLean described the Pullman cars built prior to 1889 as follows: "the old style cars were built almost entirely of wood, with ornate interior decorations and unprotected platforms at both ends." He also described the cars built between 1889-1907, "during which time the cars were constructed largely of wood, but the ornate interior decorations slowly disappeared and the added vestibules were the permanent feature. The Pullman patents on this feature practically put the Wagner Company, the only competitor of the Pullman Company, out of business."
16. "Pullman Incorporated," Fortune, January 1938, pp. 39-45ff.

17. Chicago InterOcean, 16 January 1900, from "Scrapbooks Misc.," Ser. B, Vol. 15, p. 144. It is probable that by 1900 the repair shops constructed in 1887 were in fact serving as erecting shops.
18. Town of Pullman, p. 112.
19. Doty, Town of Pullman, pp. 38-41; "Pullman Palace Car Works," Railroad Car Journal, pp. 133-134; and "Insurance Map of the Town of Pullman showing the Pullman Car Shops, Chicago, Ill.," 1 April 1901, Art Institute, Chicago, Illinois.
20. Chicago Tribune, 8 April 1892, from "Scrapbooks Misc.," Ser. A, Vol. 15, p. 95. The Pullman Company owner of the building, was partially insured for the loss -- most of the proprietors, who rented the individual stalls, were not. The following shops were located in Market Hall at the time of the fire: 3 meat markets, 2 bakeries, a tobacco and cigar shop, a confectionery, and a restaurant.
21. "Synopsis of Building News," Inland Architect and News Record, 20, (August 1892): 10.
22. Almont Lindsay has written a lucid and thorough account of the strike at Pullman. See The Pullman Strike: The Story of a Unique Experiment and of a Great Labor Upheaval (Chicago: University of Chicago Press, 1942).
23. "Town of Pullman" Mechanics 5 (28 June 1884): 474.

24. Ibid.
25. Oakland (Calif.) Enquirer, 20 October 1888, from "Scrapbooks, Town of Pullman," 1887-1890, unpagued.
26. Chicago Tribune, 17 September 1888.
27. Ibid, 19 September 1888. The Chicago InterOcean of 27 December 1881 ("Scrapbooks Misc.," Ser. A, Vol. 6, p. 113), reported "that (gas costs) \$2.25 per thousand feet when used for light only, but \$1.75 a thousand when families use it for both fuel and light." Since only the executive class of homes at Pullman (those occupied by the best-paid employees) were equipped with gas for both lighting and cooking, this discrepancy in charges was a further cause for complaint.
28. Chicago Herald, 1 December 1888, from "Scrapbooks Misc.," "Town of Pullman," 1887-1890, unpagued.
29. Chicago InterOcean 1 December 1888, from "Scrapbooks Misc.," Ser. A, Vol. 19, unpagued.
30. Chicago Times-Herald, 25 October 1898, from "Scrapbooks Misc.," Ser. A, Vol. 23, unpagued.
31. "The Death of George M. Pullman," Scientific American 77 (30 October 1897): 278.

The obituary reads in part:

Mr. Pullman will always be remembered by the step that he took when he planned to build a city on the dreary prairie outside of Chicago. This was one of the most daring ventures which an American has ever undertaken. The city was built at an expense of \$8,000,000 and has now 12,000 inhabitants, who are comfortably housed in sanitary houses, and there is not a saloon, jail or pauper in the territory. It has proved a wonderful financial success. Mr. Pullman was a typical American inventor, possessing as he did, the acute perception of what the public needed, and he had an inventive mind which grasped everything that served his purpose."

32. Chicago InterOcean, 27 July 1899, from "Scrapbooks Misc.," Ser. A, Vol. 24, unpagged.
33. Chicago Times-Herald, 15 August 1899, from "Scrapbooks Misc.," Ser. B, Vol. 6, p. 55.
34. Chicago Examiner, 15 February 1904, from "Scrapbooks Misc.," Ser. A, Vol. 27, unpagged.
35. Chicago Daily News, 9 November 1907, from "Scrapbooks, Misc.," Ser. A, Vol. 29, unpagged. The Chicago Evening Post of 21 December 1904, ["Scrapbooks Misc.," Series A, Vol. 27, 1903-1905, unpagged.] reported:

"Fifty buildings in Pullman, between 104th St. and 117th St., containing 273 apartments above the first floor are declared by the building department to be violating that provision of the tenement-house ordinance which requires sufficient exits by stairway or fire escape. Suit has been brought. . . and will be heard. . . tomorrow."

36. Chicago Tribune, 25 December 1907, from "Scrapbooks Misc.," Ser. A, Vol. 29, unpagged.
37. Chicago Times, Chicago InterOcean, 28 November 1894, from "Scrapbooks Misc.," Ser. A., Vol. 18, unpagged. A new pattern shop was later built on the site.
38. Chicago Record, 17 July 1895, from "Scrapbooks Misc.," Ser. A, Vol. 19, unpagged.
39. Chicago InterOcean, 29 April 1899, from "Scrapbooks Misc.," Ser. B, Vol 4, p. 203.
40. From "Scrapbooks Misc.," Ser. A, Vol. 23, unpagged.
41. Chicago Times, 25 March 1899 from "Scrapbooks Misc.," Ser. B, Vol. 4, p. 190.
42. "Annual Statement Relating to the Operatives and Wage-Earners at Pullman," from "Scrapbooks Misc.," Ser. B, Vol. 4, p. 177. Of these, 5,730 were males, 267 females; 2,408 were reported to be skilled workmen, 1,748 as "fairly stalled"; and 1,841 were classed as laborers.

43. Chicago Daily News, 5 March 1900, from "Scrapbooks Misc.," Ser. A, Vol. 24,
unpaged.

44. "Pullman," p. 8.

CHAPTER VIII
Change to Steel

After nearly thirty years of primarily wooden rolling stock production, the Pullman Company totally altered, reorganized, and supplemented their works at Pullman to allow the construction of steel passenger and freight cars. The Pullman Company was by no means a leader of the rolling stock industry in adopting steel construction. In fact, the change to steel had been widely discussed and implemented by others in the industry prior to Pullman's decision.¹ The first all-steel passenger car produced by the company was the "Jamestown" built in March 1907, at the cost of \$30,000.² Although the company experimented with steel cars prior to this, it appears other rolling stock manufacturers provided the economic pressure which forced Pullman's switch to steel construction.³ The Chicago InterOcean of November 5, 1904 declared:

steel cars to oust Pullmans . . . an official of the Standard Steel Car Company, [a firm] which has completed an all metal car designed for use in the postal service, declares the company will enlarge the scope of steel cars until they replace Pullman's baggage, mail, express and day coaches on many roads. In this new use of steel, interests identified with the Standard Steel Company hope to create an industry of magnitude. They believe the outcome is certain to be successful.

Railroad Gazette, of January 12, 1906, also stated "at present 8 plants in the U.S. (are) equipped for building steel cars and steel underframes. These plants turned out nearly 75,000 cars in 1905 or about 45% of the total output and of these 75,000 cars, more than 60% were built entirely of steel."⁴

By late 1905, rumors were being printed in newspapers concerning the Pullman Company's intentions of implementing "extensive improvements" to its Pullman works, but spokesmen for the company denied any knowledge of such plans.⁵ However, by the end of 1906, the company had reportedly ". . .decided to invest from \$10,000,000 to \$15,000,000 in the erection of a plant for the construction of steel cars."⁶ At the annual meeting of the company in November 1906, the directors proposed an increase in the amount of capital stock. Railway Age reported:

The growth of the business of the company has rendered necessary a large increase of its equipment The stockholders by resolution adopted the recommendations of the board. It is understood that a portion of the \$26,000,000 [approved for an increase of capitalization] is to be used for the erection of a plant for the manufacture of steel cars.⁷

Concurrent with Pullman's decision to begin construction of steel cars on a full-time basis came notice of the Pennsylvania Railroad's decision to call for bids on ". . . construction of 100 all-steel, non-flammable passenger cars."⁸ Bids were to be asked of the American Car and Foundry Company, the Standard Steel Car Company, and the Pressed Steel Car Company. The Pullman Company was not mentioned. It is apparent that, for at least some contracts, the Pullman Company was being excluded from consideration due to their lack of steel rolling stock facilities.

By the end of 1910, three major groups of buildings had been built on the Pullman car works site specifically for the purpose of erecting all-steel rolling stock. Believed to have been designed by Frank Jobsen, an architect

involved with other alterations to the plant at the time, these new buildings included the front steel erecting shop, which enclosed the area once occupied by the southern portion of Lake Vista, the southern half of the original front erecting shop and the southern portion of the first transfer table; the two parallel erecting shops near the shores of Lake Calumet just north of 111th Street, and the huge freight car facility of 103rd Street.⁹ Although the decision to switch to steel was made in late 1905, the Chicago Tribune of May 15, 1909, stated ". . . the plans for new shops to provide for the demand for steel cars were outlined about two years ago, but were abandoned temporarily on account of the business depression, and the almost total cessation of car building which followed. With the gradual return of prosperity to the railroads, and to the country as a whole, they were resumed. . . ." ¹⁰

Accordingly, although the "Jamestown" was built in the spring of 1907, work on the front steel erecting shops did not begin until October 2, 1908. Work progressed quickly, and by March 1909, the first lot of cars was laid down in the shops.¹¹

In May 1909, plans for the rest of the steel erecting facilities were unveiled and notice was given that construction was already underway. The Chicago Tribune reported:

The new additions to the Pullman shops, which are made necessary on account of the radical improvements made in the art of car building during recent years, in reality constitute almost an entire new plant. . . . The new passenger car shops will be able to turn out three all-steel passenger cars a day, increasing the passenger capacity to 175 a month, and the new freight car shops, which alone will cost \$1,250,000, will be capable of turning out 1,500 steel

freight cars a month. The largest number of cars of all kinds built in one year by the company was 25,000 . . . Work has already been started on two erecting shops (east of the present buildings) for passenger cars, each 420 x 220 feet in size with a transfer table between them for handling the car bodies. . . They will cost \$400,000 (and are of steel construction).¹²

Interestingly, the article disclosed that the Pullman Company had ". . . recently closed a twenty year contract with the Pennsylvania, and they will require about 300 steel cars in the near future."¹² It appears Pullman quickly adapted itself to steel car production and soon achieved standing as a major firm in the industry.

The Chicago InterOcean, May 13, 1909, also reported a \$150,000 electric power house, a \$150,000 steel cabinet shop connecting to the wood finishing shop, and a new \$100,000 brass foundry and finishing shop were to be constructed.¹³ A later description of Pullman's steel car facilities reported much higher costs for their construction than stated in these initial statements. The steel freight car plant was referred to as costing \$2.5 million and the rest of the steel plant as \$1.3 million.¹⁴ It is unclear which is the more accurate appraisal.

On March 29, 1910, the Chicago InterOcean reported:

The new plant of the Pullman Company at Pullman, Illinois, for the manufacture of cars, both passenger and freight, which has been in course of construction for over a year, is nearing completion. . . The first building (commenced in October 1908, completed January 1909 and covering 101,000 square feet) was followed by two other buildings completed in the summer of 1909. . . covering 255,000 square feet of ground space. . . These shops were equipped with electric motor-driven machine comprising shears, multiple punches, planers, bull dozers, riveters, presses, etc. The main building is

also equipped with two overhead traveling cranes with a capacity of twenty tons each. All new buildings were of steel, brick and concrete construction and fireproof. . . The construction of the new plant for the building of steel freight cars is now well underway (and comprises, in all, about 140 acres.)

A total of 9,500 men were listed as employed at the works.¹⁵

The nature of steel car production by the Pullman Company during the first part of the 20th century has been described by Joseph Husband in his book The Story of the Pullman Car, recently republished by the Arno Press. Containing many photos of cars under construction, it can provide the reader with clear understanding of the various operations necessary in constructing a Pullman steel car. For this reason, this report will not attempt to relate the process of steel car production.¹⁵ However, it is important to discuss the impact of the change from wood to steel construction upon the Pullman plant and labor force.

In his book, Husband states: "Generally speaking, evolution [of the Pullman car] for the first forty years was characterized chiefly by the addition, at one time or another, of certain inventions and improvements, such as the electric light and the vestibule. . . But at no time is recorded a change in the basic idea of car construction that can compare with the revolutionary change. . . recorded. . . by the construction of the first 'all steel' Pullman car."¹⁷

Though Husband doubted wooden cars reinforced with steel framing were much less safe than all steel cars, he realized the change was irreversible and that wooden cars were obsolete. Describing pre-steel days of Pullman, he wrote:

Wood-making machinery filled the great shop at Pullman; carpenters and cabinet-makers numbered a big percentage of the payroll. It was a wood-making industry.

He continued:

At one fell stroke, the old order changed to the new, the songs of the band saw, and the planer were stilled and in their stead rose the metallic clamor of steam hammer and turret lathe, and the endless staccato reverberation of an army of riveters.¹⁸

Graham Taylor, author of Satellite Cities, commented upon this change in respect to the labor required by the company:

The flood of foreigners from Southern Europe to America has been coincident with many changes in industrial processes lessening the premium upon skill. Pullman affords spectacular proof of this. The advent of the steel car put wood carving, cabinet making, and many other skilled crafts on the scrapheap and substituted metal work demanding distinctly shorter training.

Taylor stated that in 1885 Professor Ely estimates skilled workers comprised about 75% of the work force, while in 1912, Taylor could only classify 50% of the workers as skilled.¹⁹

Pullman's operation converted entirely to steel car production, yet the change was not as instantaneous as Husband seems to indicate. On the 1913 Map of Pullman, large areas of lumber storage as still shown. In Satellite Cities, Taylor writes:

Of the ordinary coaches built on contract for railroads, about 75 percent are steel body and wooden interior finish, 15 percent are all steel and only 10 percent are of wood.²⁰

An article in the Railway Review, January 3, 1914, is critical of the universal condemnation of wooden cars. The author cited major problems in controlling the inside temperatures of steel cars.²¹ However, by May 1915, Railway Review listed 956 passenger cars being built in the United States as of January 1915, and 75.8% of them were steel, 23.9% were composite, and .03% were wooden.²²

Between 1908 and 1920, many alterations of the Pullman plant transpired to better accommodate the production of steel cars. The first of these were the already mentioned steel erecting shops designed by Jobsen. In the fall of 1910, the company took the Centennial Corliss Engine out of operation and replaced it with steam turbo-electric generators of 5,500 Kilowatts combined capacity, capable of generating 7,340 Horsepower.²³ Even prior to that time, the Corliss had not powered all the shafting in the plant.²⁴ In addition to the new three-story building built as a brass finishing shop and a brass foundry, in 1917, a new hammer shop, machine shop, and truck shop were erected in the area northeast of the new powerhouse. A 1,800 foot overhead track supporting two cranes ran in front of these buildings toward the 108th Street end of the 2nd transfer table.²⁵ In 1910, a fire destroyed the entire south end of the 1883 freight shops at 108th and Langley and opened up the site for new construction.²⁶ In 1921, the rest of the 1883 freight shop went up in smoke.²⁷ The upholstery department of the Pullman company, located at the south end of the 1887 repair shops, burned in 1917 with the company immediately reporting that a "New building was to take the place of [the] one destroyed by flames."²⁸ Today, this site is occupied by the dilapidated Pullman Press Building.

In the fall of 1919, the Pullman Company announced they were remodeling some of their facilities for the production of Packard auto bodies. Claiming their main business would still be rolling stock production, the Pullman Company indicated they had few orders for rolling stock on the hand and that production of auto bodies would help them through the slump.²⁹ The Herald Examiner reported that Pullman had a \$5,375,000 contract to deliver 4,000 auto bodies. It also claimed

Pullman had a \$2 million contract for phonograph cabinets with the Edison Company.³⁰ Described in the May 1923 Pullman News (page 5) as located at the north end of the Pullman Plant, the auto body factory is shown in photos at the Chicago Historical Library as being the building presently occupying the corner of 104th Street and Maryland.³¹

In terms of production techniques, perhaps the biggest change to occur at Pullman in the 20th century was not the result of physical alterations, but came from the adoption of the Taylor system for determining material, equipment, and job allocation. The Taylor System was the brainchild of Frederick Taylor, the man often referred to as the progenitor of "Scientific Management." First adopted in the Brass Department, the system was described in the June 2, 1917

Pullman Car Works Standard,

to those of us who have vivid recollections of the old system, or rather lack of system, where every workman waited for requisitions to be made out, drew his material from the storeroom, moved it himself, and made up his own timecards, the new order of things is a constant inspiration.³²

By the end of World War I, the Pullman plant had almost totally abandoned the processes and products planned for in the original design.

FOOTNOTES

Change to Steel

1. The Engineering News and American Contract Journal 27 (January 30, 1892): 112-113 stated "...the general tendency is toward the substitution of steel for wood, in order to withstand the increased strains in service." Three months later, the same journal stated [27 (19 May): 509] "...[we are lead] to believe that steel construction has come to stay, and to increase rapidly." The Railway Review, December 15, 1900, from "Scrapbooks Misc.," Ser. A, Vol. 25, unpagged; commented, "While as yet there is no concern building steel cars on a large scale except the Pressed Steel Car Co., there are others experimenting and preparing to enter the business."

2. Currey, Manufacturing and Wholesale Industries of Chicago, page 77. The "Jamestown" was built to serve as the Pullman Company's exhibit at the Jamestown Exposition in Norfolk held that May.

Railway Age, April 19, 1907, from "Scrapbooks Misc.," Ser. A, Vol. 30, unpagged; and Railway Review, May 4, 1907, from "Scrapbooks Misc.," Ser. A, Vol. 29, unpagged, also mention the car. Railway Review described it as follows: "The seat frames and upper berths are of pressed steel, shapes and wherever practical, wood has been replaced by steel brass aluminum, or fire-proofed composite boards." The dimensions were: 72 feet 6 inches over end sills, height 14 ft. 7 in., width over and at eaves, 10ft.

3. Railway Review, December 15, 1900, "The Pullman Co. has a design of steel underframing and a coal built on this design is running experimentally on the Chicago and Alton." The Chicago Tribune, October 13, 1903, stated,

"More room in Pullman cars.... Supt. Dunbar makes a commodious one by replacing some wood with steel.... The heavy wooden posts which have been placed between backs of the seats to support the upper berths have been replaced with light steel rods."

4. Chicago InterOcean, November 5, 1904, from "Scrapbooks Misc.," Ser. A, Vol. 27, unpagged; and Railroad Gazette, January 12, 1906, from "Scrapbooks Misc.," Ser. A, Vol. 28, unpagged. The article further stated, "It is only seven years ago that the first all-steel cars were built."
5. Chicago Tribune, November 24, 1905, from "Scrapbooks Misc.," Ser. A, Vol. 28, unpagged; and Wall Street Investor, November 28, 1905, from "Scrapbooks Misc.," Ser. A, Vol. 28, unpagged; and Chicago Tribune, January 29, 1906, from "Scrapbooks Misc.," Ser. A, Vol. 28, unpagged. This article also stated, "The Pullman Company has long been convinced that wooden cars have had their day.... There is considerable steel now entering into the construction of Pullman coaches, but wooden sills still run the entire length of the car floor, 30 feet."
6. Chicago American, November 9, 1906, from "Scrapbooks Misc.," Ser. A, Vol. 28, unpagged.
7. Railway Age, November 16, 1906, from "Scrapbooks Misc.," Ser. A, Vol. 29, unpagged.

8. Financial Bulletin, November 17, 1906, from "Scrapbooks Misc.," Ser. A, Vol. 29, unpagged. The article continued, "The company's [Penn, R.R.] decision on this point was hastened by the building of the New York tunnel, through which the company will not run anything but absolutely fireproof cars."
9. Currey, Manufacturing and Wholesale Industries of Chicago, p. 77; Jobsen is listed on drawings at the Art Institute (Microfilm Roll #38, drawings 233, 237) as involved in early 20th century Pullman plant alterations.
10. Chicago Tribune, May 15, 1909, from "Scrapbooks Misc.," Ser. A, Vol. 29, unpagged.
11. N. A. Taylor "History of the Steel Shop," Pullman Car Works Standard, Vol. 1, (December 1916): p. 4. Photos of the shops in construction are located at the Chicago Historical Society.
12. Chicago Tribune, May 15, 1909.
13. Chicago InterOcean, May 18, 1909, from "Scrapbooks Misc.," Ser. A, Vol. 29 unpagged.
14. Currey, Manufacturing and Wholesale, p. 77.
15. Chicago InterOcean, March 29, 1910, from "Scrapbooks Misc.," Ser. A, Vol 29, unpagged.

16. Other descriptions and photos concerning construction practices at Pullman circa 1916-1918 may be found in the Pullman Car Works Standard. A complete collection of these exists in the Chicago Historical Society. In his book, Manufacturing and Wholesale Industries of Chicago (pp. 79-80), Currey described the new steel freight shops operation as follows, "These buildings consist of a main machining, construction and erecting shop, 350 feet wide and 1200 feet long, divided into four bays, all served with overhead cranes and equipped with machinery necessary for this character of work, and other buildings to meet the manufacturing requirements. . . . After the material has been machined and certain small sub-assemblies handled, the material is assembled beside a tract in its proper relation to the ultimate construction of the car. At one end of the track, the trucks are brought in and upon them is assembled the body of the car. First, the underframe is fitted and bolted into place, . . . the car is then moved to each successive position where the sides, ends, and roof are added, and in an incredibly short time, it emerges from the end of the shop, a completed car on its own trucks." "In the summer of 1916. . . [A single track] turned out a completed 100,000 pound all-steel hopper every 17 minutes during the day."

17. Husband, Pullman Car, p. 123.

18. Ibid, pp. 123-124.

19. Taylor, "Satellite Cities," The Survey, p. 122. In Satellite Cities (pp. 47-48), Taylor also wrote, "Diversity of industries in nearby plants provides against unemployment when the main industry runs slack (an early

concern of George Pullman). Today, nearby are located the Sherwin-Williams Co., Chicago Drop Forge and Foundry, Griffin Car Wheel Co. and other concerns." No evidence of George Pullman stating that the auxiliary industries around Pullman were to provide jobs for his workers during slack seasons was ever found by the authors of this report.

20. Taylor, Satellite Cities, p. 122.

21. B. A. Worthington, "The Steel Passenger Car and Existing Passenger Equipment," Railway Review, (January 3, 1914): 20-21.

22. "Steel and Steel Underframe Passenger Train Equipment," Railway Review May 22, 1915: 705.

The article gave the following figures for U.S. passenger car production:

<u>Acquired</u> <u>in</u>	<u>Total</u> <u>Number</u>	<u>%</u>		
		<u>%</u> <u>Steel</u>	<u>Steel</u> <u>Underframe</u>	<u>%</u> <u>Wood</u>
1909	1880	26.0	22.6	51.4
1910	3638	55.4	14.8	29.8
1911	3756	59.0	20.3	20.7
1912	2650	68.7	20.9	10.4
1913	3356	63.0	30.4	6.5
1914	4495	79.6	20.9	4.5
1915*	956	75.8	23.9	0.3

*[under construction as of January 1, 1915]

23. Viall, "Life Work of Centennial Engine," page 52; and Pullman Car Works Standard 1 (January 1917), p. 11.

24. Viall, "Engine" page 54, This article also describes the fate of the Corliss. "After the old engine had been dismantled, it was placed in storage for several months. As no one apparently cared for it, it was finally sold as junk at a price believed to be about \$3 per ton. Thus passed an engine that in its youth was considered to be a "white elephant" because of its immense size and power, which in its old age was really a small unit when compared with more powerful engines that had been developed during its life."

25. Currey, Manufacturing and Wholesale Industries of Chicago, p. 77.

26. Chicago Tribune, July 8, 1910, from "Scrapbooks Misc.," Ser. A, Vol. 31, p. 9. Loss given at \$100,000.

27. Chicago Evening News, January 27, 1921, from "Scrapbooks Misc.," Ser. A, Vol. 33, page 233. Loss estimated at \$450,000. In the Pullman Car Works Standard 1 (February 1917) p. 11, the freight drying kilns ". . . located near the old freight erecting. . . shop" were reported as burning on December 29, 1915. Loss estimated at \$15,000.

28. Calumet Index, March 16, 1917, from "Scrapbooks Misc.," Ser. A, Vol. 33, p. 2. On March 22, 1913, the Chicago InterOcean from "Scrapbooks Misc.,"

Ser. A, Vol. 31, p. 174, reported the "bolt room", one story tall, had been destroyed by fire.

29. Chicago Daily News, October 18, 1919, from "Scrapbooks Misc.," Ser. A, Vol. 33, page 161; and Chicago Herald Examiner, November 13, 1919, from "Scrapbooks Misc.," Ser. A, Vol. 33, p. 162.

30. Chicago Herald Examiner, November 13, 1919.

31. Pullman News, May 1923, p. 5. It is not known exactly what this building was originally built for, but it could have been at least partially for the upholstery department. In the Pullman Car Works Standard, August 2, 1917 (p. 8) a new building for upholstery is described as "progressing very rapidly. . ." In the Long Beach Press, November 4, 1923, (from "Scrapbooks, Misc.," Ser. A, Vol 34, p. 202) Pullman is reported to have built ". . .only Packard and Moon enclosed bodies."

32. E. J. Centon, "The Taylor System Office", the Pullman Car Works Standard, 2 (June 1917): 4. In the October 1916 Car Works Standard, 2 (June 1917): 4.

CHAPTER IX

Epilogue

During the twenty years preceding the first World War Pullman enjoyed its golden age of profits. With the absorption of the Wagner Company in 1899, the Pullman Company achieved an essential monopoly of the sleeping car business. On the manufacturing side, Pullman was involved in one of the greatest revolutions of the car building industry, the transition from the wood to the steel car. The revolution affected both freight and passenger car building. Cars with a "plain, sanitary and modern" finish were the new symbols of night travel.¹

In 1924, under the regime of President Edward F. Carry, Pullman's manufacturing holdings were organized into a separate company known as the Pullman Car & Manufacturing Company. In 1927, Pullman Incorporated was formed to hold this subsidiary along with the Pullman Company, an operation thereafter concerned solely with sleeping and parlor car operation. Carry, whose arrival at Pullman had hinged on the acquisition of the Haskell & Barker plant at Michigan City, Indiana, added still other manufacturing properties to the Pullman empire. By 1929, besides the main car works at Pullman and the Haskell & Barker works, Pullman had acquired a freight-car factory at Birmingham, Alabama; the Standard Steel Car Company works at Hammond, Indiana and at Butler, Pennsylvania; wheel foundries at Michigan City, Houston and New Orleans; a passenger-car plant at Worcester, Massachusetts; and two Standard Steel Car possessions overseas. Several years later, in 1934, the manufacturing company's name was changed again to Pullman Standard Car Manufacturing Company to reflect these consolidated interests.

Scarcely had this empire been put together than it found itself out of work. 1930 was a good manufacturing year (the Pullman Car Works shipped 799 passenger cars), but production slumped badly in 1931. In 1932, no sleeping cars and only six passenger cars and 252 freight cars were built.² Early in the 1920s the rails has begun to lose passenger traffic with the rise of the automobile, but sleeping-car revenues held up through 1920. It was out of the Depression that still another new era in car construction technique was born. Industry officials discovered what George Pullman never forgot: a product must be mechanised.

The first great engineering development to emerge was that of air conditioning. Next was the first lightweight aluminum train, "City of Salina," in 1933. The weight of the new aluminum car was approximately 78,000 pounds compared to 135,000 pounds of the older standard steel car. Five years later, "City of Los Angeles" and "City of San Francisco" introduced "roomettes"; this latest Pullman innovation became a standard feature of American sleeping cars.³

The introduction of lighter, streamlined cars brought changes in car assembly. Pullman used to rivet its steel sleepers and day coaches. Welding largely took its place in the new high-tensile alloy-steel cars. Arc welding was now used on the underframe and side frames of the car, with electric spot welding used to sheath the sides and roof.⁴

Production of passenger cars picked up after 1935, but never regained its earlier status. During World War II the freight car shops were turned into an aircraft plant and produced wings for the C-47 planes. Car building halted

completely for the years 1943 to 1945, when Pullman's work force built patrol and landing craft for the U.S. Navy and rehabilitated day coaches and old sleepers for use by American troops abroad.⁵ After the war, car production resumed, supplemented between 1951 and 1956 by munitions contracts for the Korean War and miscellaneous job orders. In 1947, Pullman Incorporated sold the Pullman Company (the operating company) to 59 railroads as a result of antitrust proceedings instituted by the Federal Government in 1940.⁶

The 1950s saw no new orders for railroad and passenger equipment. One newspaper's headline told the story: "Pullmans, Coaches on Way Out as Riders Take to Air, Buses."⁷ Pullman Incorporated President Champ Carry made the decision to abandon the historic Pullman Car Works. The company announced plans to sell its property in the area bounded by Cottage Grove Avenue, 104th Street, 111th Street and the Rock Island Railroad tracks. Old and obsolete buildings were to be demolished. Pullman Standard President C. W. Bryan, Jr., announced, "The sale of this property is part of a long-range plan. . . to consolidate passenger car production so far as possible around Building 100, a big, modern shop completed during the post-war period."⁸ With car-building operations virtually halted (only 200 men were reported at work on an order for aluminum gondola cars and wheel sections for passenger-car assembly elsewhere)⁹, demolition began in February 1957 and continued through the year. The Water Tower, Engine House, Wood Machine Shop and a host of later plant additions were all destroyed. On September 10, 1957, the 258-foot chimney -- "no longer an efficient, economical part of plant operations" -- was toppled. Drillers loosened bricks on the three sides of the chimney, shored up the openings with the timber, and piled lumber high around the base. Pullman Standard President C. W. Bryan, Jr., fired the wood.¹⁰

Railroad passenger travel continued to decline. During 1959, when the last of the original works buildings was demolished, Pullman workers built 35 commuter cars for the Northwestern Railroad, rebuilt a number of other cars, and fabricated two aluminum highway bridges for use on the Jericho Turnpike in New Jersey.¹¹ The latter represented the diversification that characterizes Pullman Incorporated today, a company whose profits are by no means derived exclusively from car building.

In 1976, for the first time in almost twenty years, Pullman Standard began long-distance railroad passenger equipment, having received an order in 1975 from Amtrak to build 235 "bi-level" cars, including coaches, sleepers, diners and "cafe" cars. These cars were built at "PCW II," the Pullman plant at Hammond, Indiana. In 1976, "PCW I," the works at Pullman, began production on an order for 754 cars for the New York City Transit Authority, the largest passenger car order in railroad history.¹²

Thus, while Pullman Incorporated today hardly resembles the business begun to many years ago by its namesake, current orders are keeping alive the tradition of car building. Pullman Standard, like its predecessors, participates in a business whose fluctuations are both violent and spectacular. The "feast" that characterizes the moment could again become "famine" once current orders are completed, given the unpredictable nature of the industry.¹⁴

Finally, car-building technique is vastly different today. Once, the Pullman Car Works manufactured nearly every item required for the construction of its cars; now 75 per cent of the car is prefabricated by other companies

elsewhere.¹⁴ This is ironically illustrated by the fact that Pullman Standard today leases space in the Union Foundry building it sold years ago, in order to warehouse such pre-fabricated articles as fiberglass end sills and car seats.

As for the community of Pullman, sociologist Graham Romeyn Taylor visited there in 1915 and reported that, with the end of company ownership and management, Pullman was left "with a forlorn air of faded glory:"

The old lawns which made each street beautiful in the old days are kept up or not, as the present owners happen to elect . . . [Still,] individual effort due to pride in home ownership has brightened the Pullman of today with an after-glow reflecting earlier beauty. A Saturday afternoon stroll shows many a householder working to improve his own dwelling.¹⁵

By this time new immigrants had replaced many of the old workers, with Hungarians, Russians, Italians and Poles comprising the largest groups. According to Taylor, the flood of these new immigrants was coincident with changes in industrial processes that lessened the premium upon skill. Pullman afforded "spectacular proof" of this: "The advent of the steel car placed three wood-carving, cabinet-making and many other skilled crafts on the scrap heap and substituted metal work demanding distinctly shorter training." The semi-skilled work of assembling, erecting and riveting of steel cars bore hard on the older employees who, writes Taylor, could not "'stand the racket.'" Many of them departed.¹⁵

Crowded conditions persisted in the "block houses," with many families still compelled to take in boarders to meet their expenses. With the passage of time, all but one of these tenements have been torn down. In 1915, community agitation brought about the elimination of the dangerous grade crossing of the Illinois Central and Michigan Central Railroad tracks. The hazard had caused 41 deaths near the Pullman works in a period of just 22 months. Saloons were slow to invade the town, and most of them remained concentrated at Kensington, or "Bumtown," a name that persists.¹⁷

Through the generosity of Harriet Sanger Pullman, George Pullman's widow, the library continued in operation, later moving into a new building in nearby Roseland as part of the city-wide system. The Arcade Theater, being located up one flight of stairs, conflicted with city building regulations and fell out of use. In the mid-1920s the much neglected Arcade Building was destroyed.

At Roseland, Palmer Park was developed from a bequest by Chicago business magnate Potter Palmer, thus making up for the loss of the Athletic Island. In Pullman the new George M. Pullman grade school replaced the original schoolhouse, which was demolished in 1913. One portion of the Pullman livery stable continues in active use as the "Pullman Motor Stables," though fire has reduced the Market House to a single story, now boarded up. Local residents hope to reclaim the structure. Finally, the introduction of other industries in the Calumet region helped assure greater stability, since the community no longer was dependent on a single company. By 1915, the Sherwin-Williams Company, the Griffin Car Wheel Company and International Harvester had located plants near Pullman, and today the South Chicago vicinity boasts one of the largest concentrations of industry in the country.

The Pullman community has been remarkably resilient and since 1968, has activity worked for self-preservation in the face of encroaching urban problems. South Pullman has fared better than the neighborhood to the north, always having been larger, closer to the commercial facilities of 115th Street and Michigan Avenue, with more single-family homes easily adapted to modern needs and "natural" boundaries that served to preserve it as a cohesive and identifiable community.

In 1968, the Beman Committee for the Preservation of Historic Pullman was created to preserve the unique architectural character of the community. The Committee actively sought--and received--designation of the Pullman neighborhood as a National Historic Landmark. South Pullman has also been named a city landmark district. Volunteers conduct popular tours of the neighborhood and the Committee, in conjunction with the Pullman Civic Organization, continues to address the problems that face a community within the midst of a decaying urban environment.

Meanwhile, the Historic Pullman Foundation was created to participate more directly in preservation activities. This group recently purchased the declining Hotel Florence and hopes to restore the "grand old lady" to her original beauty. A restaurant at the hotel and the sale of Pullman memorabilia helps promote tourism, with profits employed in the restoration effort.

In 1884, the anonymous author of an article for the journal Mechanic expressed doubt about the future success of George M. Pullman's "model" town, but concluded: "If the social experiment fails Pullman will remain one of the most attractive towns in the United States. . ."¹⁸ The writer's words have proved prophetic.

FOOTNOTES

Epilogue

1. "Pullman Inc.," Fortune, January 1938, p. 94.
2. Ibid.; and "Car Building and Shipping Record, Pullman Car Works," company log showing numbers of passenger cars shipped by years, 1880-1961. This log is in the possession of Robert E. Johnson, Assistant to General Manager, Passenger Unit, Pullman-Standard.
3. Carbuilder, December 1943, p. 30.
4. Ibid., pp. 30-31; and "Pullman Inc.," Fortune, p. 96.
5. A news clipping (Chicago Tribune, April 22, 1945) contained in the Pullman Collection, Chicago Public Library, Pullman Branch Library, reports that the Pullman shops built a total of 78 ships for the Navy, and that "One innovation was the breaking down of a ship's construction into sections or subassemblies so that a large amount of work could be done on the subassembly bench. This procedure was similar to that in passenger coach construction."
6. Ironically, this ruling against Pullman proved to be in its favor as the decline in rail travel worsened in later years.
7. New York Times, September 15, 1957, Sec. 3, pp. F1 and F10.

8. Calumet Index, February 13, 1957.
9. Chicago Daily News, August 8, 1957.
10. "Smoke Stack Topples," Carbuilder, October-November 1957, p. 22.
11. South End Reporter (Chicago), March 18, 1959.
12. Pullman Car Works News Bulletin, June 1976, and flyer distributed by Passenger Unit Engineering Department on the occasion of its "Open House," May 16, 1976.
13. Interview with Robert E. Johnson, Assistant to General Manager Passenger Unit, Pullman-Standard, at PCW II, Hammond, Indiana, July 28, 1976.
14. Interview with H. Conor Nolan, Manager of Works, Pullman-Standard, Chicago (Pullman-Standard, Chicago (Pullman), July 1976.
15. Satellite Cities A Study of Industrial Suburbs, National Municipal League Series (New York and London: D. Appleton and Company, 1915; reprint ed., New York: Arno Press & The New York Times, 1970), pp. 37, 28.
16. Ibid., pp. 42-44.
17. Ibid., pp. 38-40, 50-52.
18. "New Town of Pullman," p. 475.

1. "The Allen Paper Car Wheel." The Western Manufacturer 9 (November 30, 1881): 219.
2. Andreas, A. T. History of Cook County, Illinois, From the Earliest Period to the Present Time. Chicago: By the Author, 1884: 610-628.
3. "The Arcadian City of Pullman." Agricultural Review 3 (January, 1883): 53-89.
4. Baughman, James P. [review of Buder's book] American Historical Review LXIII (April 1968): 1250-1251.
5. Buder, Stanley. Pullman: An Experiment in Industrial Order and Community Planning, 1880-1930. New York: Oxford University Press, 1967.
6. Chicago Herald, May 16, 1882, "Scrapbooks Misc., "Series A, Vol. 5, 1881-1882, p. 181.
7. Chicago Herald, May 7, 1883, "Scrapbooks Misc.," General Superintendent's Office, Vol. 1, 1882-1886, p. 27.
8. "The City of Pullman." Chicago Tribune, September 17-21, 1883.
9. Currey, Josiah Seymour. Manufacturing and Wholesale Industries of Chicago. (3 vols.) Chicago: Thomas B. Poole Company, 1918.

10. Doty, Duane. "D. Doty." Handwritten record book kept by Pullman Town Agent 1882. Historic Pullman Foundation Archives, Chicago.
11. Doty, Mrs. Duane. The Town of Pullman: Its Growth with Brief Accounts of Its Industries. Pullman, Illinois: T. P. Struhsacker, 1893. Rev. ed. Chicago: Pullman Civic Organization, 1974.
12. Dreiser, Theodore. "The Town of Pullman." Ainslee's Magazine (March 1899): 189-200.
13. Eaton, Charles H. "Pullman, A Social Experiment." To-Day 2 (January 1895): 1-9.
14. Ely, Richard T. "Pullman: A Social Study." Harpers New Monthly Magazine 70 (1885): 452-465.
15. Fuller, Henry B. "An Industrial Utopia: Building Gary, Indiana, To Order." Harper's Weekly 5 (October 12, 1907): 1482-1483, 1495.
16. Giedion, Sigfried. Mechanization Takes Command: A Contribution to Anonymous History. New York: Oxford University Press, Inc., 1948. Reprint ed. New York: W. W. Norton and Co., Inc., The Norton Library, 1959.
17. Harding, Carroll R. George M. Pullman (1831-1897) and the Pullman Company. New York, San Francisco and Montreal: The Newcomen Society in North America, 1951.

18. Harper, William Hudson. "Something About Pullman Parlor Cars." Santa Claus 1 (January 4, 1890): 204-205.
19. Holbrook, Stewart H. The Story of the American Railroads. New York: Crown Publishers, 1947.
20. Husband, Joseph. The Story of the Pullman Car. Chicago: A. C. McClurg & Co., 1917. Reprinted. New York: Arno Press, 1972.
21. The Building Interests. Vol. 1 of 6 vol. series Industrial Chicago. Chicago: The Goodspeed Publishing Co., 1891.
22. "Improvements in Freight Car Construction" Engineering News and American Railway Journal, 27 (January 30, 1892): 112-113.
23. Jenkins, Charles E. "Solon Spencer Beman." Architectural Reviewer 1 (February 1897): 46-101.
24. Koopman, H. R. Pullman: The City of Brick. Roseland, Illinois: By the author, 1893.
25. Lillibridge, Robert M. "Pullman: Town Development in the Era of Eclecticism". Journal of the Society of Architectural Historians 12 (October 1953): 17-22.

26. Manual Illustrating a Few Patterns for Architectural Iron Work by the Union Foundry and Pullman Car Wheel Works. C. W. Trowbridge, ed. J.M.W. Jones S&P Company, 1885.
27. McLean, John 100 Years in Illinois. Chicago: Peterson Linotyping Company, 1919.
28. Mencken, August. The Railroad Passenger Car, Baltimore: Johns Hopkins Press, 1957.
29. Mohl, Raymond A. and Betten, Neil. "The Failure of Industrial City Planning: Gary Indiana, 1906-1910." Journal of the American Institute of Planners 38 (July 1972): 202-215.
30. Muller, H. R. "The One Hundredth Anniversary of George Henry Corliss." Power 47 (May 14, 1913): 682-687.
31. "The New Town of Pullman." Mechanics 5 (June 28, 1884): 474-475.
32. Mirmons, George C. "Modern Industrial Plants," Part I The Architectural Record 44 (November 1913): 414-421.
33. Norman, Oscar E. The Romance of the Gas Industry. Chicago: A.C. McClung and Company, 1922.
34. Pictureque Pullman, its Streets, Buildings, Scenery. [Chicago: E. Ulbright, 188-?].

35. Pointer, Norbert J. III. "Pullman: A New Town Takes Shape on the Illinois Prairie." Historic Preservation 22 (April-June 1970): 26-35.
36. Pond, Irving K. "Pullman - America's First Planned Industrial Town." Illinois Society of Architects Monthly Bulletin. (June-July 1934): 5-8.
37. Portee, Horace. "Railway Passenger Travel." Scribner's Magazine 4 (1888): 296-319.
38. Illinois of To-Day and Its Progressive Cities. E. R. Pritchard, ed. Chicago: First National Bank Building, [1897].
39. "Property and Facilities of Pullman - Standard Car Manufacturing Company Located Between Cottage Grove & Doty Avenue, from 104th St. to 111th St., Chicago, Illinois" Comp. by Sumner S. Sollitt Construction Co. Chicago, Illinois, July 1952.
40. "The Pros and Cons of Iron Car Construction." Engineering News and American Railway Journal 27 (May 10, 1892): 509.
41. "Pullman" The Western Manufacturer 9 (November 30, 1881): 205, 214-216.
42. The Pullman Car Works Standard Vol. 1 (October 1916).
43. "The Pullman Company - Manufacturing Department, Some Interesting Notes and Views of Pullman Car Works Located at Pullman, Chicago." [1920s?].

44. The Pullman Co., "Scrapbooks.," Ser. B., 1883-1903.
45. The Pullman Company Manufacturing Department. (description) Chicago: Rogers & Company, n.d.
46. The Pullman Exhibit at the Cotton States and International Exposition, 1895. Chicago : Rogers & Wells, Printers, n.d. Reprinted from The Atlanta Construction, December 22, 1895. Pullman Collection, Chicago Public Library, Pullman Branch.
47. "Pullman Incorporated" Fortune, (January 1938,): 39-45; (February 1938,) 73-82ff.
48. Business Training Corporation. Pullman Production Methods. 5 Vol. New York, Chicago: J.J. Little and Ives Company 1926.
49. Report of Commissioners of the State Bureau of Labor Statistics of the Industrial, Social and Economic Conditions of Pullman, Illinois n.d.
50. Schermehorn, Richard, Jr. "Nathan Franklin Barrett, Landscape Architect." Landscape Architecture 10 (April 1920): 109-113.
51. "A Scientific City." Scientific American Supplement. No 429 (March 22, 1884): 6840-6841.
52. "Sewage Purification in America: Pullman, Illinois." Engineering News 29 (January 12, 1893): 25-28.

53. "Solon Spencer Beman: President of the Illinois Chapter A.I.A." Construction News 22 (October 1904): 291.
54. The Story of Pullman. Chicago, 1893 (Chicago Historical Society).
55. The Strike at Pullman: Statement of President George M. Pullman and Second Vice-President T. H. Wickes, Before the U.S. Strike Commission [1894?].
56. "Synopsis of Building News." The Inland Architect and News Record XVII (October 1891): 33.
57. Taylor, Frederic Winslow. Scientific Management. Comprising: (1) Shop Management (1911) (2) The Principles of Scientific Management (1939). (3) Testimony Before the Special House Committee (1947). New York and London: Harper and Brothers Publishers, 1947.
58. Williams, Benezette. "The Pullman Sewerage." Reprinted from the Journal of the Association of Engineering Societies, Vol. 1, no. 8.